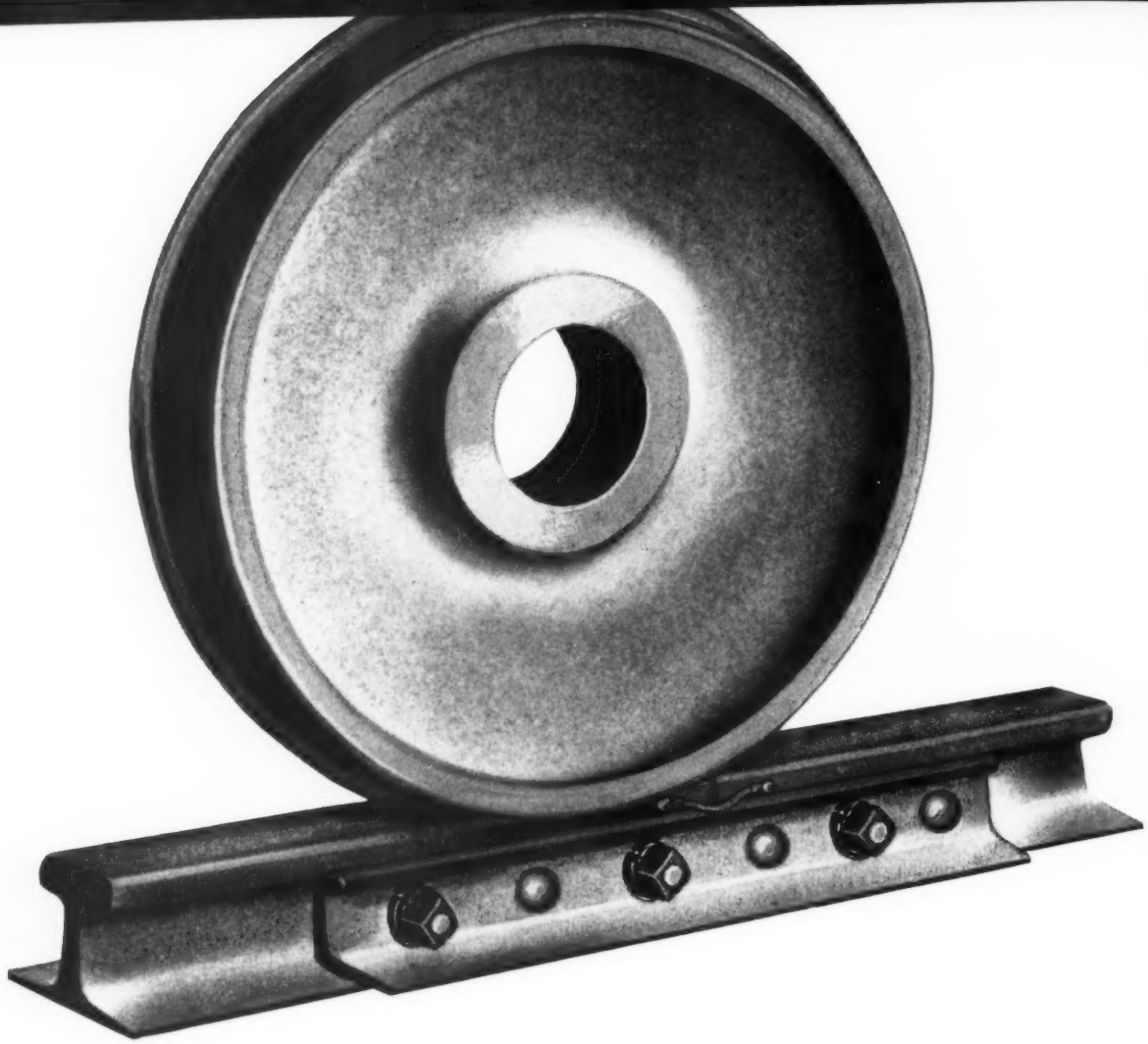


Smooth riding track!

with RELIANCE spring washers

HEAVY TRAFFIC, high speeds, shifting ballast and a multitude of other every-day operating hazards constantly subject rail joints to wrenching stress and strain. The usual result is wear and looseness which cost the railroads money in maintenance time and material. This maintenance cost can be reduced. The 1" bolt size Reliance Hy-Pressure Hy-Crome spring lock washers are designed to exert a reactive pressure of 4000 pounds when backed off ¼ turn. In addition, their reactive range (return travel of spring washers in inches) is at least .143 from a flattening load of 20,000 pounds to free height. This means that joint bolts stay tight in spite of individual loads and developed wear. You can save time and money by specifying Reliance Hy-Pressure Hy-Crome spring washers for rail joint bolt applications. One of our railway fastening engineers will be glad to discuss the type spring washer that will meet your requirements.

"Edgemark of Quality"

Roadmasters' Convention
Bridge and Building Convention
Sept. 15 through Sept. 17

This is an invitation to our friends to visit the Reliance suite at the Conrad Hilton Hotel during the conventions.

EATON

MANUFACTURING COMPANY, RELIANCE DIVISION

OFFICE AND PLANTS • MASSILLON, OHIO

SALES OFFICES: NEW YORK • CLEVELAND • DETROIT • CHICAGO • ST. LOUIS
SAN FRANCISCO • MONTREAL

Published monthly by Simmons-Boardman Publishing Corporation, 79 W. Monroe St., Chicago 3, Ill. Subscription price: United States and Possessions, and Canada, one year $2.00 (special rate to railroad employees only, one year $1.00). Single copies 50 cents. Entered as second-class matter January 20, 1933, at the post office at Chicago, Ill., under the act of March 3, 1879, with additional entry at Bristol, Conn. Volume 48, No. 9.

1931-*1952*...MODERN BALLAST CONDITIONING

Proven

Over 21 Years

Complete

Ballast Conditioning Trains Entirely Self-Contained on Our Own Standard Railroad Equipment

R.B.C.C. five-unit trains do a thorough ballast conditioning job on *both sides* of the track in one pass, two center ditches, two shoulders, or one of each.

R.B.C.C. three-unit self-propelled trains (photo above) do a thorough ballast conditioning job on *one side* of the track *in one pass;* one center ditch, or one shoulder.

No other equipment for outfit cars or dirt handling need be furnished by the Railroad. No railroad cars are tied up, as our equipment with complete facilities stores and disposes of all dirt removed from fouled ballast. Each train contains a complete maintenance shop and store room.

One track only is occupied by these trains to do a thorough job of ballast cleaning, complete excavating, and dirt disposal. Adjoining tracks can be cleared *in one minute* when necessary.

BEFORE

AFTER

BEFORE

AFTER

RAILWAY BALLAST CONDITIONING CORPORATION

Picture Proof of thorough ballast conditioning. Unretouched photos of actual contract service show before and after cleaning with our equipment.

R.B.C.C. ballast cleaning and excavating service, complete with personnel and equipment, is handled on contract basis.

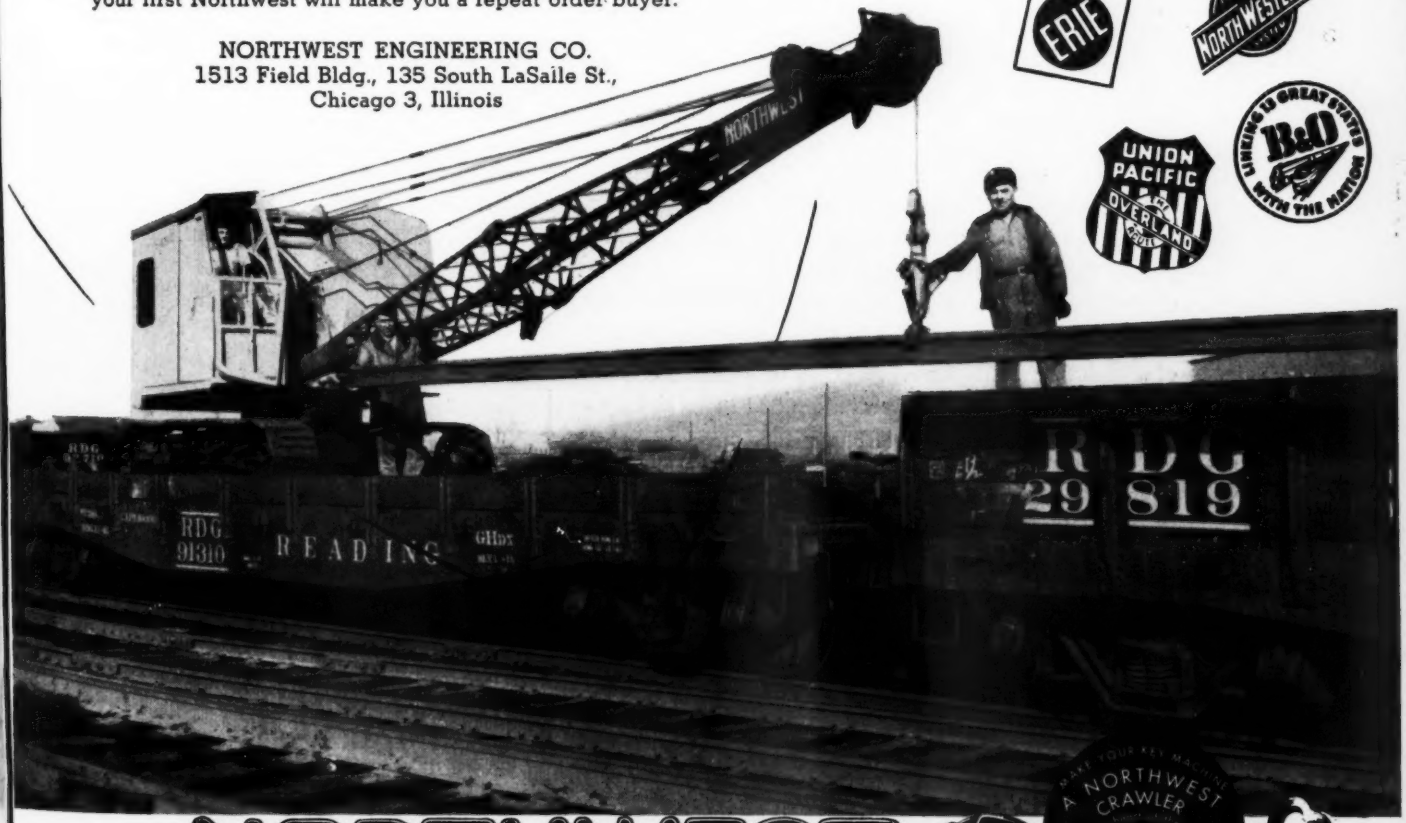
RAND TOWER, MINNEAPOLIS, MINNESOTA • METROPOLITAN BANK BLDG., WASHINGTON, D.C.

In the heart of the job— on America's Leading Railroads . . .

THE leading railroads of the country have proved Northwests on their maintenance-of-way and storeyard jobs. The Northwest Crawler is a real railway man's machine. Its simplicity alone makes it worth considering. The rugged design and construction with its cast steel bases and cast steel machinery side frames, stands up under heavy railway service — keeps shafts in alignment — and reduces wear. Easy operation, the result of the "Feather-Touch" Clutch Control, increases operating safety and keeps the output curve up. Northwest steering and Northwest Crawlers, with their self-cleaning action, takes Northwests where other machines have difficulty and make loading and unloading easier.

You are making long-time plans. The Northwest is the machine for the heart of your maintenance-of-way jobs and you can't afford to have anything but the best in the heart of the job! Plan to have Northwests in those *Key Spots*. Make it the Key Machine and your first Northwest will make you a repeat order buyer.

NORTHWEST ENGINEERING CO.
1513 Field Bldg., 135 South LaSalle St.,
Chicago 3, Illinois



NORTHWEST

THE ALL PURPOSE RAILROAD MACHINE

MAKE YOUR KEY MACHINE A NORTHWEST CRAWLER

UNIFORM HARDNESS PATTERNS IN MILL END-HARDENED RAILS

Etched cross section view of the heat effected zone at the end of the rail. This zone will be a minimum of ¼" deep in the center extending outward to the sides as illustrated.

An etched oblique view of the heat effected zone of the rail end. This zone will cover the full width of the rail head and extend longitudinally a minimum of 1½" from the end of the rail.

An oblique view of an etched longitudinal section through the middle of the rail, depicting the depth and longitudinal length of the heat effected zone.

Employing the principle of Gradient Heating by means of gas fuels, a controlled hardness pattern is imparted to the rail end. Surface decarburization is very much less, due to the short time the metal is at heat in the presence of a protective atmosphere.

This process produces a hardness of 331 to 401 BHN at a spot ¼" to ½" from the end on the center line of the rail head. The hardness shows a gradual transition from this point to the normal rail hardness. These gradual transition zones create tough, impact-resisting structures below the surface and enhanced fatigue strength.

The metallurgy of the rail, its dimensional precision and physical characteristics are rigidly controlled at CF&I's modern rail mill.

You are cordially invited to visit the CF&I Pueblo Plant to inspect these facilities.

RAILS AND ACCESSORIES

THE COLORADO FUEL AND IRON CORPORATION

DENVER, COLORADO

CF&I

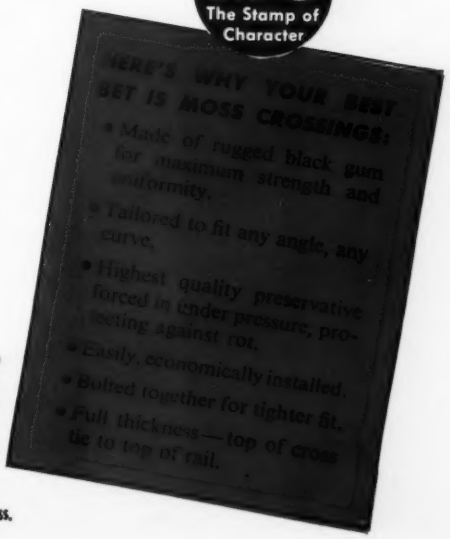
1057

PLENTY TOUGH

and ready to prove it!

MOSS *Creosoted Black Gum* CROSSINGS

MC
The Stamp of Character



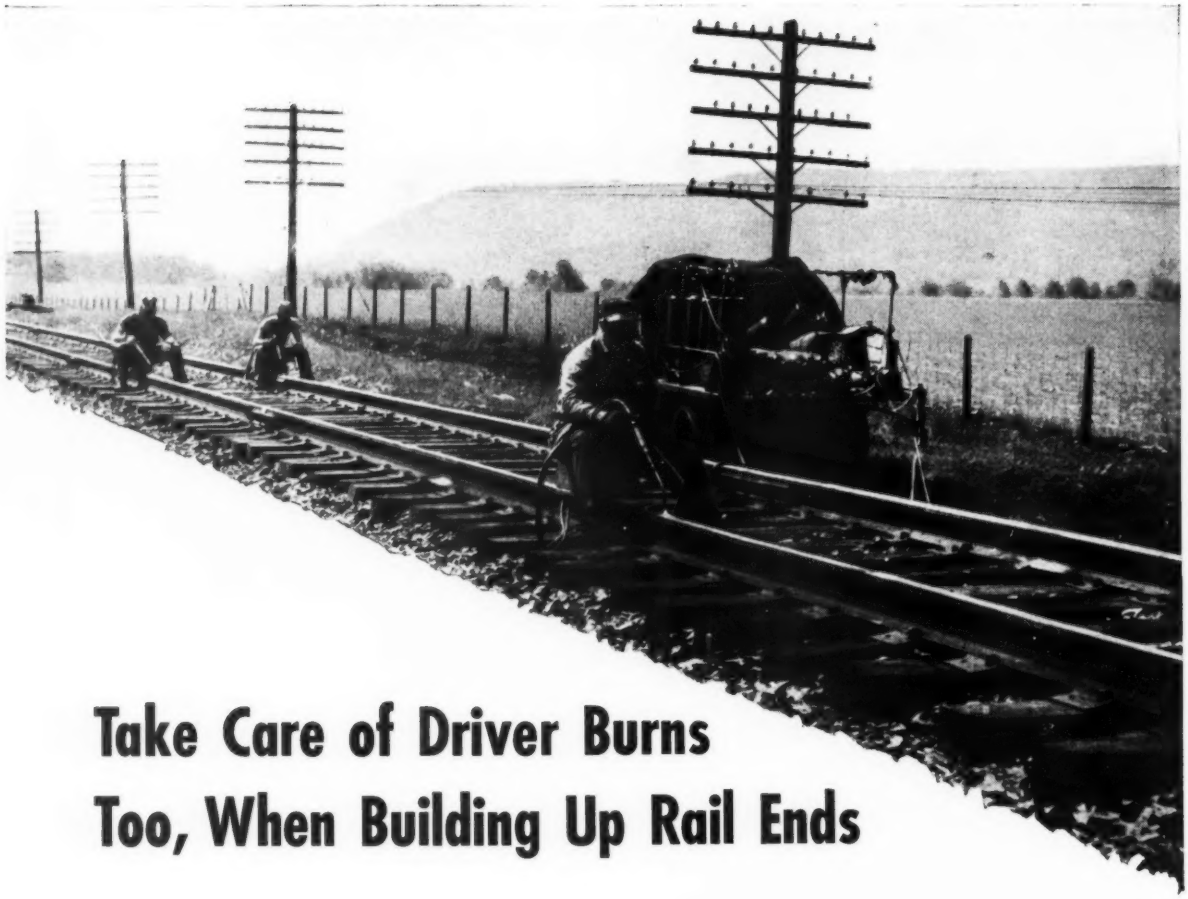
● These Moss Crossings are tough. They're built to take it. Heavy vehicular traffic pounds at them day after day, month after month, year after year, yet many Moss Crossings have been in service fifteen years and more, with very little sign of deterioration. For crossings that are sturdier, more rugged, that render longer service with a minimum of maintenance ...specify Moss Creosoted Black Gum Crossings.

T. J. MOSS TIE COMPANY

700 SECURITY BUILDING • SAINT LOUIS 2, MISSOURI

Cross Ties • Switch Ties • Lumber • Poles and Posts • Piling • Crossings

WOOD PRESERVING PLANTS: Mt. Vernon, Ill.; E. St. Louis, Ill.; Granville, Wis.; Shreveport, La.; Columbus, Miss.



Take Care of Driver Burns Too, When Building Up Rail Ends

When your rail-end welding gangs are out on the job, driver burns can be repaired at the same time. Manpower, tools, and supplies are all on hand to do both jobs.

The pictures show how driver burns are removed by a large Eastern railroad. The gang shown is one of several out on the line using OXWELD MW rod to build up rail ends and eliminate driver burns. Frequent checks with the rail detector car in the last five years have shown that the original soundness of the rail has been restored.

Call on OXWELD for details on how this procedure can be adapted to your track programs.

"Oxweld" and "MW" are registered trademarks.

Here's how easily driver burns are built up with OXWELD MW rod.

OXWELD RAILROAD SERVICE COMPANY
A Division of Union Carbide and Carbon Corporation
UCC
Carbide and Carbon Building Chicago and New York
In Canada:
Canadian Railroad Service Company, Limited, Toronto

OXWELD RAILROAD SERVICE

SINCE 1912 THE COMPLETE OXY-ACETYLENE SERVICE FOR AMERICAN RAILROADS

NOW all the HOT PATCH material you want..any type..any quantity where and when you want it

for ALL maintenance and small paving jobs

the NEED

In the face of ever heavier traffic loads, rising costs and lack of funds greatly limit new construction and place an ever greater burden on maintenance programs in city, town, county and state. For this work even the best patch is none too good. Yet until the advent of the new Mixall, an efficient and economical means of producing all types of hot high quality patch material has not been available.

is ANSWERED

A small, highly portable unit, capable of on-the-spot production of even the highest types of hot mixes comparable to those produced in Barber-Greene's largest continuous hot mix plant—*that* is the Mixall. Its range of usefulness extends throughout the field of road maintenance into small paving and resurfacing jobs.

In the Mixall, Barber-Greene offers a unique and effective combination of an efficient rotary drum aggregate dryer with a proved B-G twin shaft heated pugmill mixer. It is rightly called the Mixall because of *all* the things it can do . . .

- . . . **Mix all quantities:** from a single 300 lb. batch up to 5 tons per hour of hot mix—or up to 10 tons per hour of cold patch.
- . . . **Mix in all locations:** towed to the job by truck loaded with aggregate . . . fed directly from truck or from stock pile or pit. Can work in a single traffic lane. No set-up time required.
- . . . **Mix in all weather:** heated aggregate makes low atmospheric temperature mixing possible — allows quick repair to prevent major failures.
- . . . **Mix all types:** of bituminous materials including stabilized mixes—as well as low slump Portland cement mixes.

BARBER-GREENE COMPANY, AURORA, ILLINOIS, U.S.A.

Barber-Greene

Send me the descriptive 8-page bulletin on the Mixall.

Name .....

Firm Name .....

Address .....

City ..... State .....

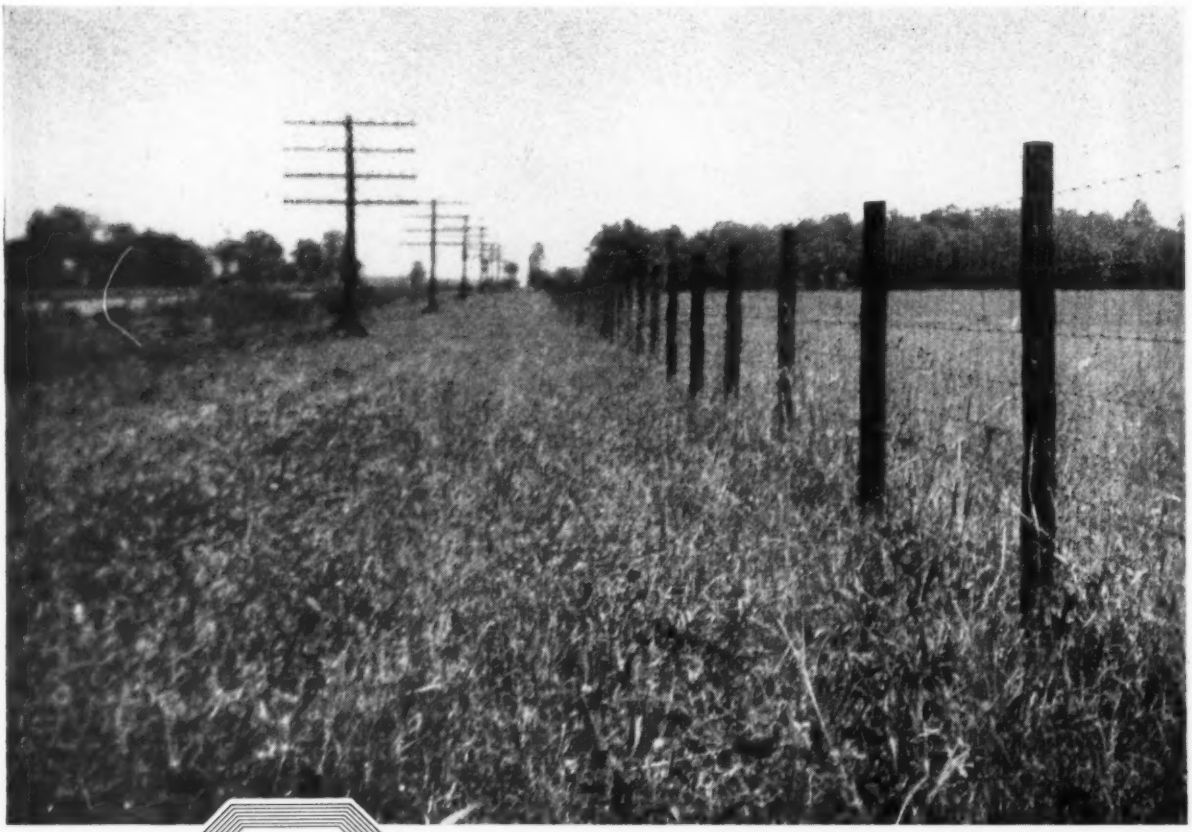
C&O cuts fencing costs

with Koppers Pressure-Creosoted Posts

To cut non-productive costs, in 1925 the Chesapeake & Ohio Railway began a test of posts for fencing. Carefully recorded installations were made of every kind of post that was considered usable. Treated and untreated wood of a number of species, as well as steel posts, were included. The results of the test were reported before the American Wood Preservers' Association in April this year.

By 1949, it had been clearly demonstrated that sizeable economies would result from the use of pressure-creosoted wood posts. Such posts set in 1925, not only were in service in 1949, but looked as though they would serve another twenty years. None of the other posts approached this performance. *On the basis of its own tests,* C & O then instituted a program of fencing with Koppers pressure-creosoted posts—more than 30,000 up to May, 1952.

If you want the facts on the economy of pressure-creosoted posts, they are contained in C & O's report to AWPA. We'll be glad to send you a copy of this report or supply additional information.



C & O right-of-way fencing near Richmond, Va.

KOPPERS **PRESSURE-TREATED WOOD**

KOPPERS COMPANY, INC. • Pittsburgh 19, Pa.

Economical Switch Protection

With RAIL-TEL

NOW IS THE TIME to get set for next winter's snow and ice. You can roll with winter's best punches with RAIL-TEL Switch Heaters, burning propane, city or natural gas. These efficient, economical melters keep operations unhampered in busy yards and terminals and keep isolated switches and C. T. C. layouts functioning as usual out along the line.

Representative roads, both east and west, are RAIL-TEL equipped. Whether operated by manual or remote control, these heaters afford complete, low-cost protection under all weather conditions. Write now for complete information.

THE RAILS COMPANY

NEW HAVEN, CONN. HOBOKEN, N. J. ST. LOUIS, MO. CHICAGO, ILL.

Best in a tight scrape

Ditching, banking, or leveling right-of-ways. Slogging through muck or slugging it out with rock. The "Caterpillar" No. 40 Scraper teamed with a "Cat" Diesel D4 Tractor is an off-track work horse for the Nashville, Chattanooga & St. Louis Railway.

"They are 75% better than the costly hand shovel method and save me 20% over other equipment," reports R. O. Corbitt, supervisor of construction.

These scrappy units are working a 40-mile stretch on the Chattanooga Division. Averaging 3 round trips an hour, each "Caterpillar" team hauls 4½ yards a half-mile. Part of their work is in earth with 50% rock, the rest in muck.

Mr. Corbitt singles out 2 of the No. 40 Scraper's many features for particular praise: its maneuverability at close quarters and the rear wheel adjust-to-raise pan to go over tracks at crossings.

Working in tight spots is easy for the No. 40 Scraper because of its short turning radius. In addition its high apron lift and forced ejection assure faster, cleaner spreading. This results in shorter cycle time.

You can learn about this hard-working pair — the Diesel D4 Tractor and No. 40 Scraper — from your "Caterpillar" Dealer. He can tell you how "Caterpillar" equipment will pay off in higher production and economy on your job.

CATERPILLAR TRACTOR CO. • PEORIA, ILLINOIS

CATERPILLAR

REG. U. S. PAT. OFF.

DIESEL ENGINES
TRACTORS • MOTOR GRADERS
EARTHMOVING EQUIPMENT

NEW VALPARAISO WOOD BRIDGE—PROTECTED WITH PENTA,
the clean wood preservative
—AS SEEN IN SYMBOLIC ART TREATMENT

WOOD TIMBERS

...offer strength *plus* endurance when they're penta* PROTECTED

Railroads have proved many times during the last 15 years that PENTA-protected wood will last longer because it resists termites and decay. The recently completed wood bridge in Valparaiso, Indiana, spanning the Grand Trunk right-of-way is just another instance where PENTA-protected wood was the choice of structural building materials.

In this structure PENTA makes possible the safe use of wood—at three to four times less cost than using other materials!

The choice of PENTA-protected wood by experienced railroad maintenance management for car lumber, platforms, buildings, ties and poles results in economy of construction and greatly reduced maintenance costs—it can do the same for you!

THE DOW CHEMICAL COMPANY
MIDLAND, MICHIGAN

The Dow Chemical Company
Dept. PE 64 • Midland, Michigan
Please send me: ☐ Plant wood treating specifications
☐ Valuable booklet, "Pointers on Penta" ☐ Sources of treated wood

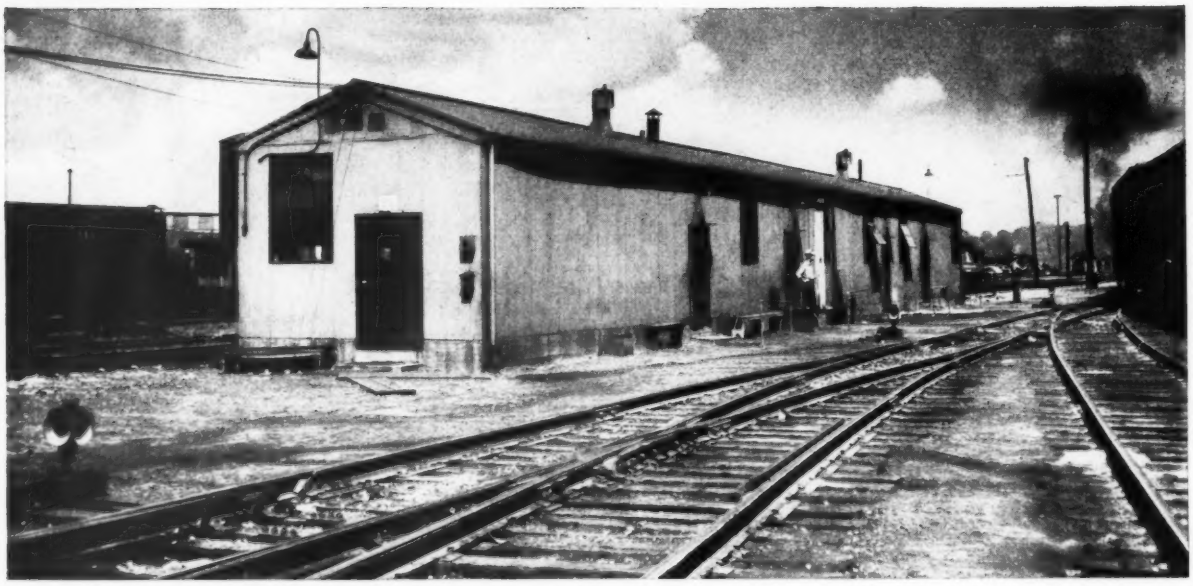
Name_____ Title_____

Company_____

Address_____

City_____ State_____

DOW *penta CHLOROPHENOL



Right now, this STEELOX Building has all the advantages of a permanent locker and washroom building in a yard. But next month it could be a hundred miles away serving as a workshop. Relocation is easy.

Reason is that such buildings are erected with the unique STEELOX panel that provides both structural support and finished surface. This makes it easy to extend, rearrange, or completely dismantle and move your STEELOX Building to a new location. Obsolescence is never a problem.

Upkeep costs are low with STEELOX. There is nothing to go wrong — nothing to crack, warp or rot. Even fire holds no fear, thanks to all-steel construction. About all the maintenance required is an occasional coat of paint.

Cost of erection is low. Your regular crew can handle the job by following instructions that come with each STEELOX structure. And the building gets finished in a hurry.

Why not try Armco STEELOX Buildings the next time you need a strong, sturdy structure? Write for information. Armco Drainage & Metal Products, Inc., 1792 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. Export: The Armco International Corporation.

ARMCO

ARMCO STEELOX BUILDINGS

FLAME... for a "PAINT READY" SURFACE

AIRCO flame cleaning removes mill scale and crusted deposits *completely* – as only searing heat can do the job. Old paint and rust disappear... leaving the surface clean and moisture free – ready for immediate protective coating. The sooner you paint after flame cleaning, the better the job!

AIRCO provides a number of special-application flame cleaning tips. For structural steel... car sides and underframes... angle bar sections of rails... as well as special tip assemblies to prepare axles for magnetic particle inspection. All are readily adaptable to your present welding equipment.

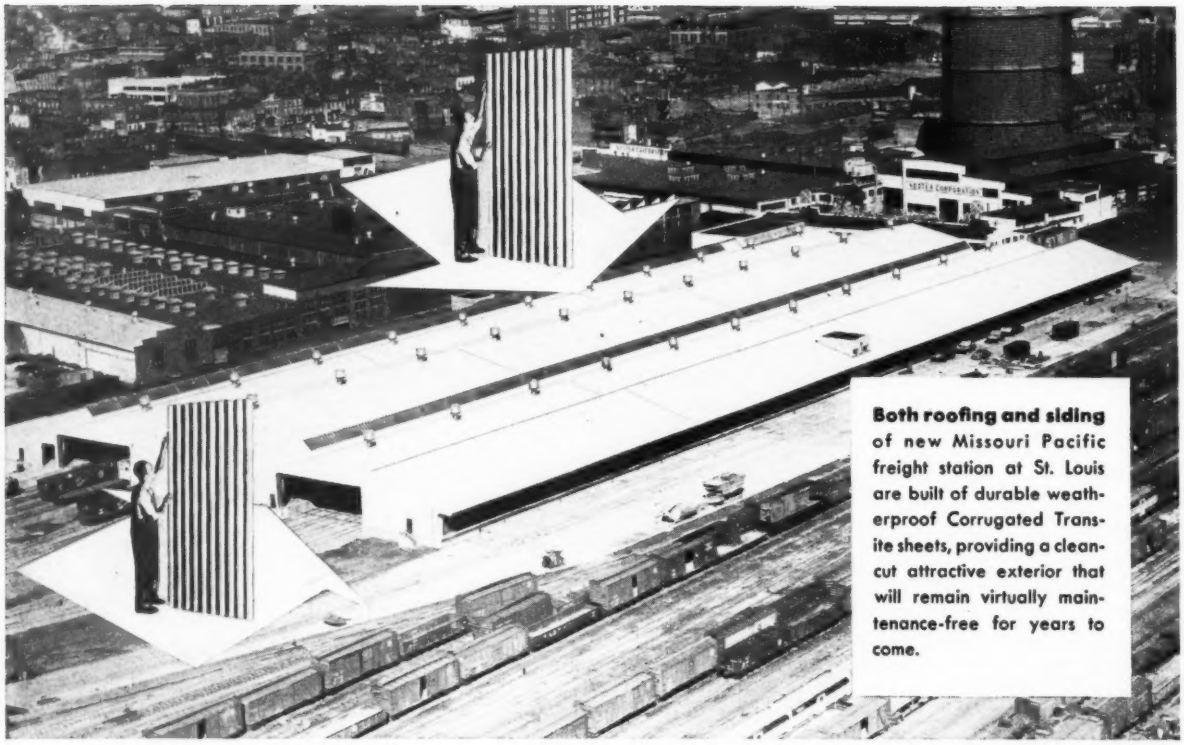
AIRCO recommends the proper equipment... assists you in designing flame cleaning positioners and fixtures for special applications ... maintains a fully-staffed Railroad Technical Department to help you in the initial stages of any flame cleaning operation. Contact your nearest Airco office!

AIRCO

AIR REDUCTION

AIR REDUCTION SALES COMPANY • AIR REDUCTION MAGNOLIA COMPANY
AIR REDUCTION PACIFIC COMPANY
REPRESENTED INTERNATIONALLY BY AIRCO COMPANY INTERNATIONAL
Divisions of Air Reduction Company, Incorporated
Offices in Principal Cities

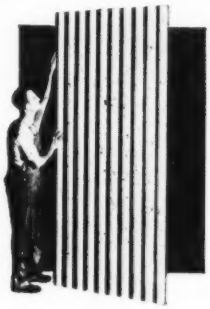
at the frontiers of progress you'll find



Both roofing and siding of new Missouri Pacific freight station at St. Louis are built of durable weatherproof Corrugated Transite sheets, providing a clean-cut attractive exterior that will remain virtually maintenance-free for years to come.

Built with

asbestos-cement CORRUGATED TRANSITE* for low maintenance and long life



WHATEVER YOUR REQUIREMENTS for modern, attractive railroad buildings—be it freight station, diesel house, shop or tool shed along the right of way—you can build it quickly and economically with these fireproof, weatherproof, rustproof, and rotproof sheets of Corrugated Transite.

Construction with Transite is fast—and cost saving—because it comes in large sheets (from 3 to 11 feet long, 42 inches wide) that are easy to handle, go up quickly and cover large areas with a minimum of framing. Once in place, Corrugated Transite is virtually maintenance free, since it requires no paint or special treatment to preserve it.

Used for both roofing and siding on either new or remodeled structures, Corrugated Transite can be used alone, or in combination with other materials such as glass brick, regular brick, glass or stone. It is easy to cut and drill, and is readily fastened to steel or wood. It can be salvaged and reused.

Why not investigate how this modern, pressure-molded asbestos-cement corrugated industrial building material saves money . . . and provides attractive, long-lasting, trouble-free structures for any requirement you may have. For complete details, write to Johns-Manville, Box 60, New York 16, N.Y. In Canada, write to 199 Bay Street, Toronto 1, Ontario.

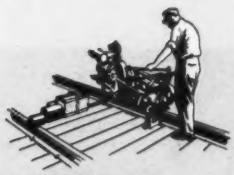
*REG. U. S. PAT. OFF.

JOHNS-MANVILLE JM PRODUCTS

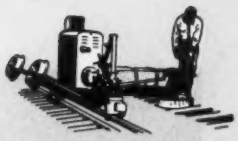
Johns-Manville

94 YEARS OF SERVICE TO TRANSPORTATION

SPIKE PULLER . . . By getting spikes out faster this machine speeds up relaying and reduces the cost of the entire operation.

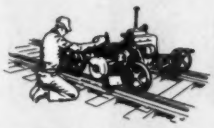


TRACK WRENCH . . . Provides uniformly controlled tightening on track bolts to prolong rail life and make better riding track.

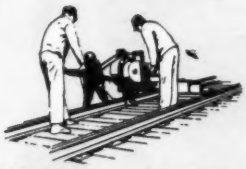


ADZING MACHINE . . . Provides tie seats in keeping with today's track maintenance standards. All level and in same plane.

RAIL DRILL . . . A compact, lightweight, low-cost easily set drill that proves a money saver.



RAIL GRINDERS . . . With four types of grinders, Nordberg can supply the machine best suited to any type of maintenance grinding.

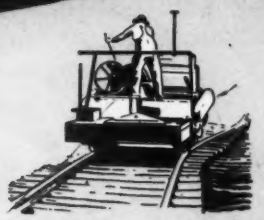


SPIKE HAMMER . . . All spikes driven straight and at big savings in time and money.

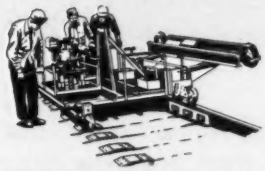
Use these NORDBERG "Mechanical Muscles"* to do a better, faster maintenance job at lower cost!

POWER JACK . . . Maintains alignment while speeding up ballasting and general surfacing operations.

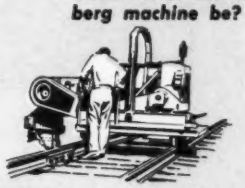
LOOKING AHEAD . . . Each year, for the last 6 years, Nordberg has introduced at least one new machine specifically for track work. *What will the next Nordberg machine be?*



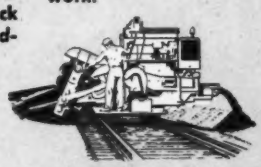
TRACK SHIFTER . . . Especially suited to heavy lining and high lifts. For new construction, flood repair and grade or line change work.



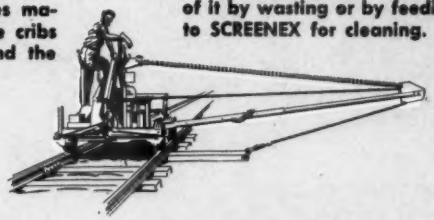
DUN-RITE GAGING MACHINE . . . Nordberg's newest development — for extremely accurate gaging by correctly positioning the tie plates.



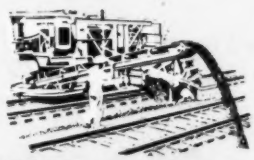
CRIBEX® . . . Removes material contained in the cribs and deposits it beyond the ends of the ties.



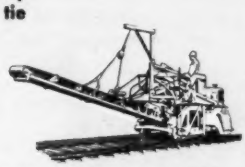
BALLASTEX® . . . Excavates the ballast in area between tracks or in shoulder. Disposes of it by wasting or by feeding to SCREENEX for cleaning.



GANDY® . . . A triple-purpose machine for pulling ties—inserting ties—and as a material handling crane.



SCREENEX® . . . Takes excavated fouled ballast fed by BALLASTEX, cleans material and returns it to track, intertrack, or shoulder.



DSL YARD CLEANER . . . Cleans more track faster, better, more economically . . . without damaging ties.

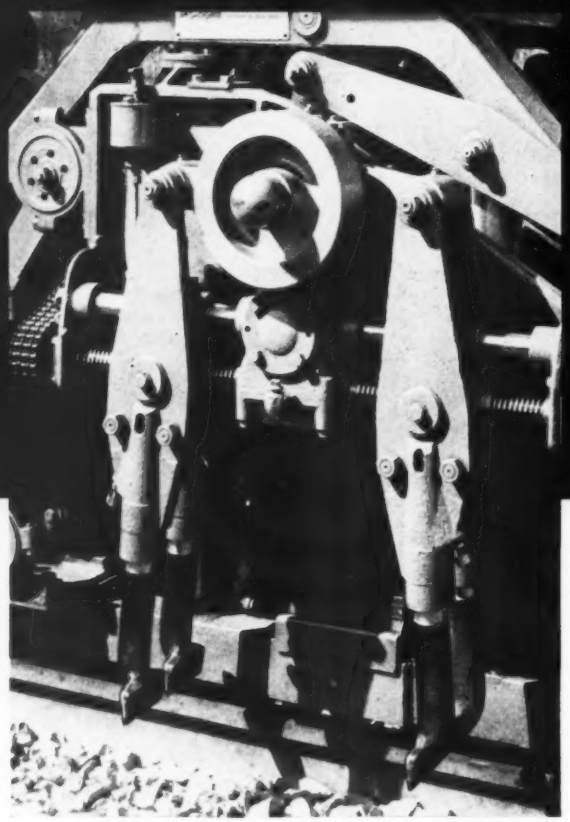
For full details on any or all of these Nordberg "Mechanical Muscles"*, write for Bulletins.

R1052

NORDBERG MFG. CO.

MILWAUKEE, WISCONSIN

MATISA *



*

Not before the vital specification of *faultless track* has been met, do M. W. men consider any other single factor.

Pressure-vibration combined with *horizontal* action is the new *Matisa-tamped* standard by which others must be judged.

(Ask to take a field trip on film in your office.)

THE MATISA EQUIPMENT CORPORATION, 224 SOUTH MICHIGAN BLVD. • CHICAGO 4, ILLINOIS

TRACKWORK SPECIALISTS ALL OVER THE WORLD

Matisa

NEWS NOTES...

SEPTEMBER, 1952

...a resumé of current events throughout the railroad world

For the first time in the history of American Railroads, the 5-year average of tie renewals per mile of maintained track fell below 100 at the end of 1951. This figure indicates an average service life of more than 30 years, and is said to be due, in part, to the heavy use of treated ties. In attaining this average, tie renewals on Class 1 railways reached a record low of 29,061,327 in 1951, or 1,400,000 less than the number installed the year before.

•

Net income of Class I railways for the first half of 1952 was $290 million, according to an estimate of the bureau of Railway Economies, AAR. This compared with $260 million in the same period last year. Operating expenses in the first six months amounted to more than $3,999 million compared with $3,964 million in first half of 1951.

•

Maintenance of way and structures expenses of Class I railways totalled $745,195,667 for the first six months of 1952. This was 3.6 per cent more than was spent in 1951. June expenses, however, were 1.5 per cent lower than last year.

•

Freight-car building program is "perhaps slipping into reverse" according to Arthur H. Gass, chairman of the Car Service Division, AAR. Since the adoption of the program two years ago, car ownership has increased only 40,000 whereas the program calls for an increase of 126,000 cars. Because of the steel strike, the installation of new cars in recent months has barely exceeded retirements.

•

July deliveries of new, domestic freight cars again reflected the effect of the steel strike by dropping to 5,402 cars. This compared with 6,411 in June and 5,290 in July 1951, according to a joint announcement of the American Railway Car Institute and the AAR.

•

Television made its debut as a railway work-saving device in exploratory tests conducted recently at Barr yard on the Baltimore & Ohio Chicago Terminal. The tryout was made with a new type RCA-Victor camera taking car numbers, inspecting running gear and overseeing general yard operations. Results are said to have justified further investigation.

•

A new type of mechanical reefer has been completed in Canadian National shops. Refrigeration equipment is suspended beneath the car body and a bank of electric heaters fastened in the ceiling. The new car can be heated by transferring power from the cooling equipment to the heaters.

•

I.C.C. grants more time for AB brake installations, setting the deadline date back six months. This gives car owners until December 31, 1952, to install AB brakes on their freight cars.

NEWS NOTES (continued)

Earthquakes late in July caused widespread damage to railroad facilities in California. Greatest damage occurred to tunnels, in one of which the track dropped 40 ft. More than 1,000 men and 100 units of heavy earth-moving equipment worked 24 hours a day to repair four of the damaged tunnels—"daylighting" two and partially "daylighting" another.

•

A gas turbine locomotive, built by Westinghouse-Baldwin, has completed a series of experimental runs on the M-K-T with "very satisfactory results" according to Katy officers.

•

Railroad Construction Indices for 1951 issued by the Bureau of Valuation of the I.C.C. show that the overall average index for all R. & E. accounts was 307, an increase of 19 points above 1950 (based on 1910-1914 costs as 100). Lowest construction index was 148 for grading, thus reflecting the effect of a high degree of mechanization.

•

Railroad expenditure of $300 million on road terminal facilities between Jan. 1, 1950, and Jan. 1, 1954, is the defense-expansion "goal" announcd by the Defense Production Administration. This goal is the basis on which D.P.A. grants accelerated amortization certificates, 234 of which it has issued for a total value of $136 million.

•

Carloadings in the third quarter of 1952 are expected to be 1.2 per cent below those in the same period last year, according to estimates of Regional Shippers Advisory Boards.

•

Average revenue per passenger-mile increased from 2.56 cents in 1950 to 2.6 cents in 1951, according to Bureau of Transport Economics and Statistics, I.C.C. During the same period, average revenue per ton-mile increased from 1.329 cents to 1.336 cents, reflecting small changes in average length of haul and freight-rate increases.

•

Higher prices for steel were approved by the Director of Price Stabilization, effective July 26. This brings the price of No. 1 O.H. steel rails to $75.50 per net ton at United States Steel Company mills.

•

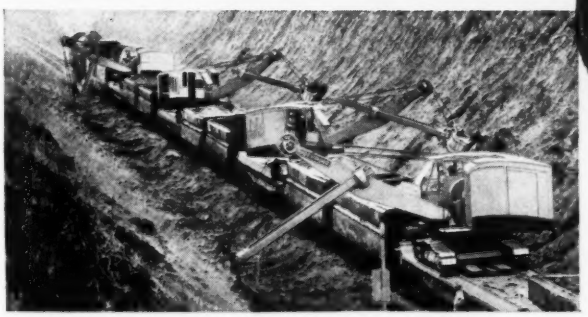
ALSO WORTH NOTING—Fred G. Gurley, president of the Santa Fe, was elected a director of the Centennial of Engineering, a celebration of which is now in progress in Chicago . . . . Ray W. Toth, superintendent of communications and signals of the Frisco, has been named chairman of the Signal Section, AAR, succeeding the late E. S. Taylor, engineer of signals, Canadian Pacific . . . . The Rock Island is laying its first continuous welded rail "as an experiment" in a five-mile section of line west of Peru, Ill. . . . Yard-service employees on 80 roads get five-day week under agreement signed by the roads and the Brotherhood of Railroad Trainmen . . . . Beneficiaries of the retirement-survivor benefit system reached 500,-000-person total in June, according to the Railroad Retirement Board. At the same time, benefit payments rose to $37 million per month.

works on and off-track

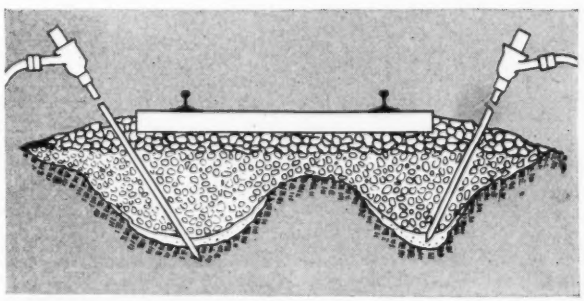
To save you the extra cost of separate on and off-track cranes, Koehring RailAid combines all the advantages of a self-propelled track crane with the versatility of a standard crawler crane. It is self-powered through extended lower traction shaft of crane and universal coupling on rail propulsion car . . . travels forward and reverse at 4 rail speeds up to 14.4 m.p.h.

RailAid loads or unloads itself on ramp-equipped propulsion car in less than 10 minutes . . . sets car on and off-track . . . clears the track for normal traffic. Work of crane and the road crew is uninterrupted for the complete shift. Crane lifts 6.6 tons from car, 8¼ tons from ground . . . loads, unloads rails in yards and along the line, lays rails, places timbers and trusses on bridge construction and repairs, speeds scrap handling and salvage. Standard 30-ft. boom extends to 50 feet . . . readily converts to magnet crane, clamshell, dragline, pile-driver, ½-yd. shovel or hoe.

Full details on Koehring RailAid are covered in fact-packed bulletin . . . write us for your copy.



3 LARGER SIZE Koehring excavators have dipper capacities up to 2½ yards . . . lift capacities up to 79½ tons. Heavy-duty ¾-yard 304 (above) safely lifts 13.9 tons on crawlers . . . 25 tons on rubber-tired truck or cruiser mounting. Reserve strength helps protect heavy work schedules against costly down time.



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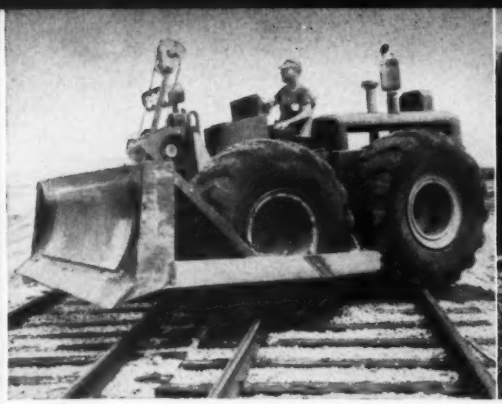

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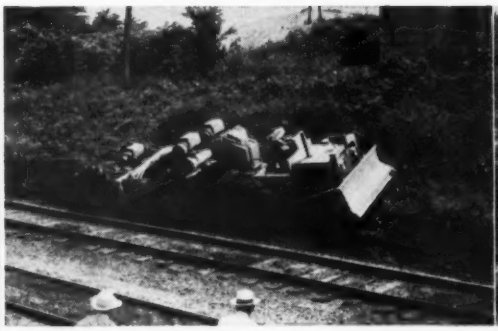

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with work trains?

do more jobs faster

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with less manpower

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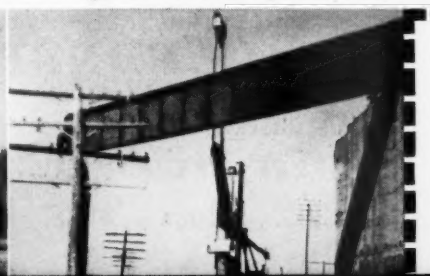

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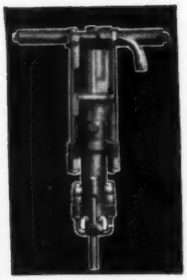

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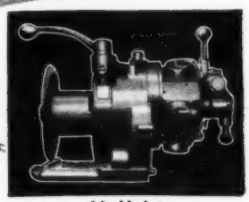

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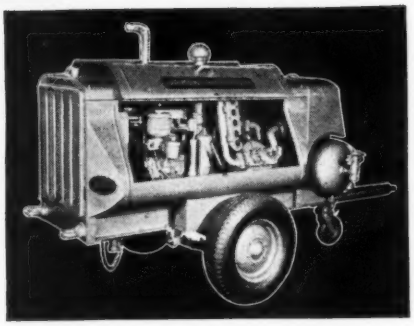

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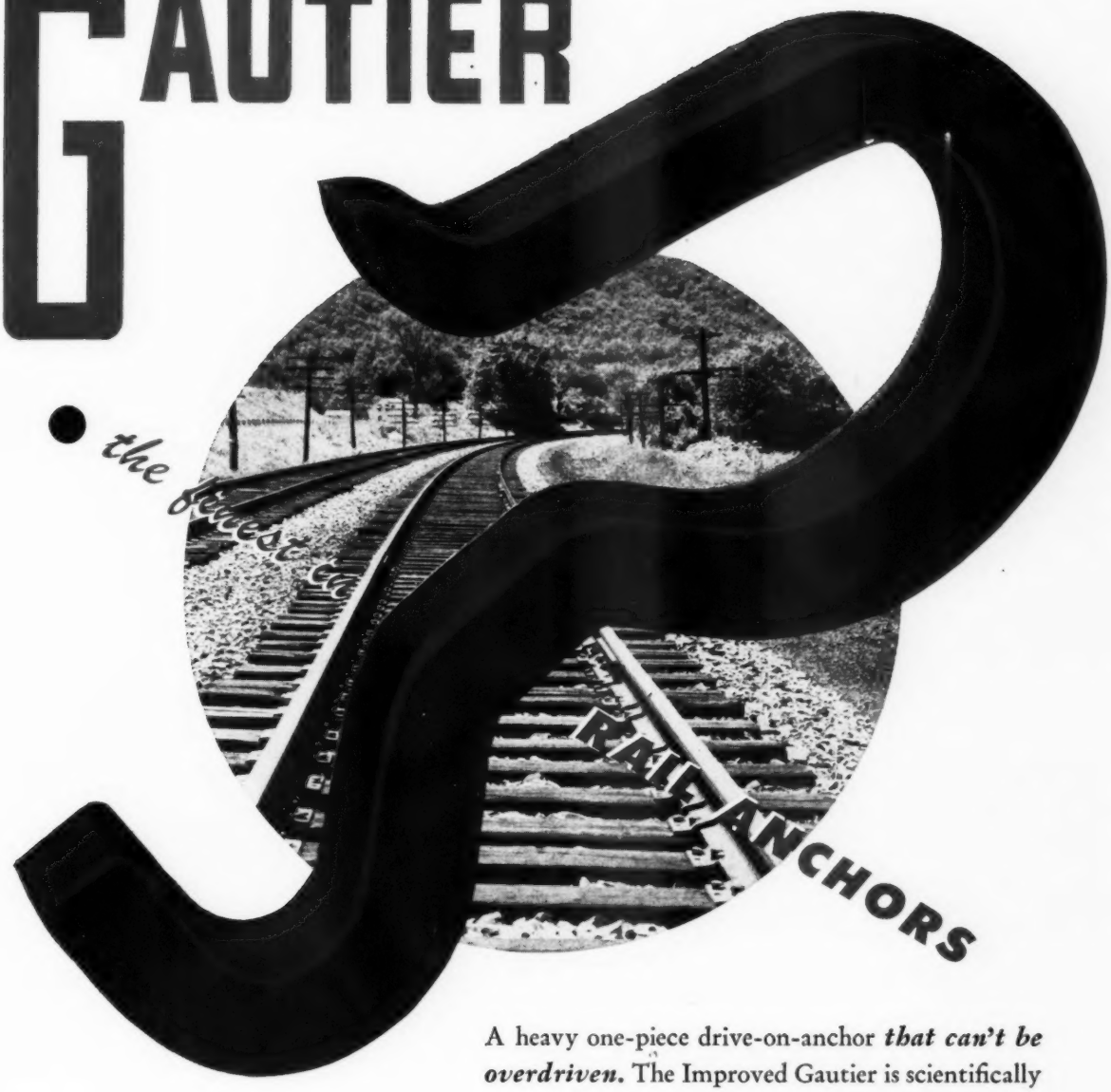

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Improved Gautier rail anchors are in constant use at strategic points on railroads throughout the country reducing maintenance-of-way costs and meeting the requirements of track engineers and the A.R.E.A. ***Write for complete information and folder.***

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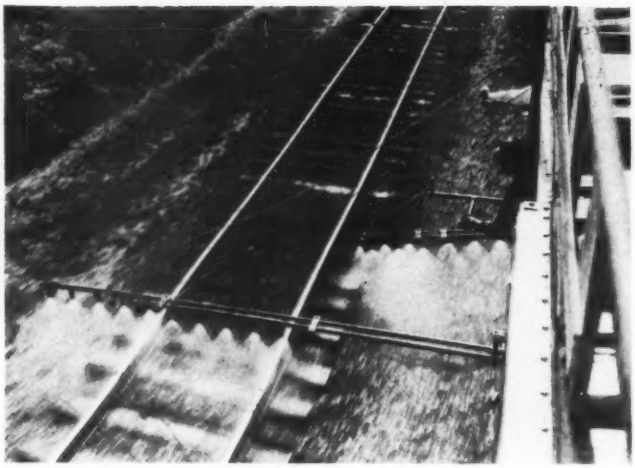

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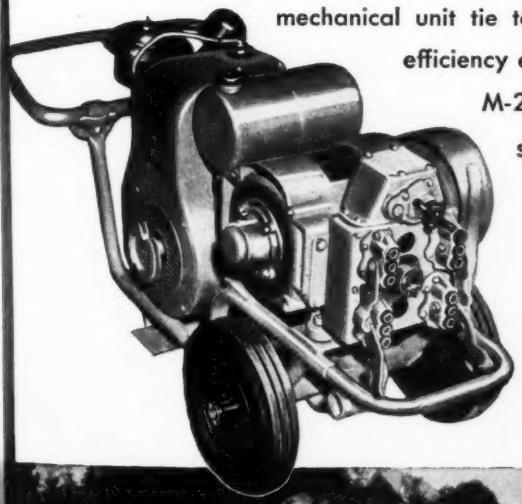

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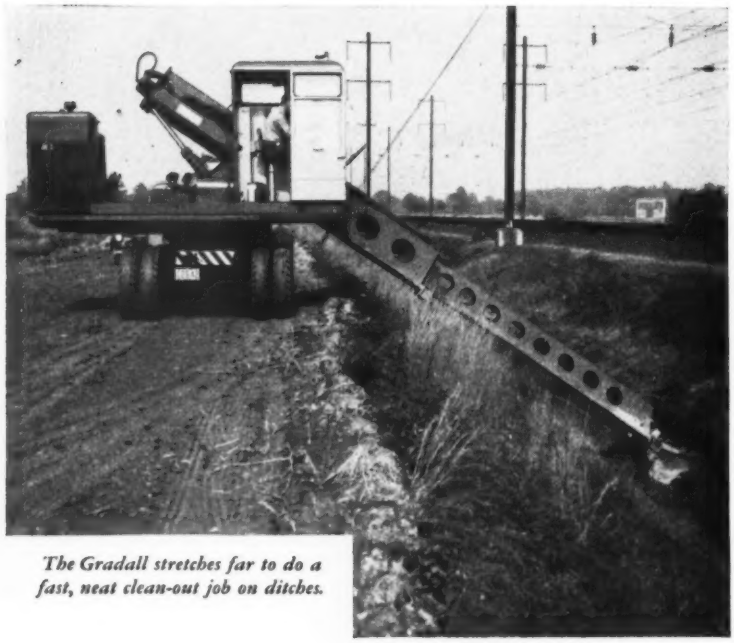

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EACH DAY about 400 passenger trains and 45 freight trains travel the high speed four-track electrified line between New York and Philadelphia. An elaborate system of right-of-way ditches with lead-off canals has the effect of turning the entire 91-mile stretch into a fill, for better roadbed stability and improved riding.

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But—when shatterproof Corrulux goes *in*, maintenance costs go *out!*

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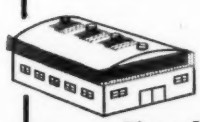

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The big 1½ cu. yd., 75 horsepower Model HM "PAYLOADER" is fast earning a reputation as a valuable off-track maintenance-of-way tool because of its combination of power, mobility and versatility — power and traction to get *big* production even when ground conditions are poor . . . mobility to move quickly to the job under its own power at speeds up to 16 miles per hour, and to walk easily over the rails . . . versatility to dig, load, grade, bulldoze, backfill, spread, pull and push.

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- **increase car movement at night**
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The complete Jordan spreader-ditcher-snow plow line offers you a year-around solution to every roadbed maintenance and snow removal problem: ballast plowing, roadbed shaping, ditch cutting, fill spreading, bank widening, shoulder dressing, ice cutting and track flanging.

Plan to watch a Jordan in action and you'll see why so many railroad men say, "It does the work of an army of men."

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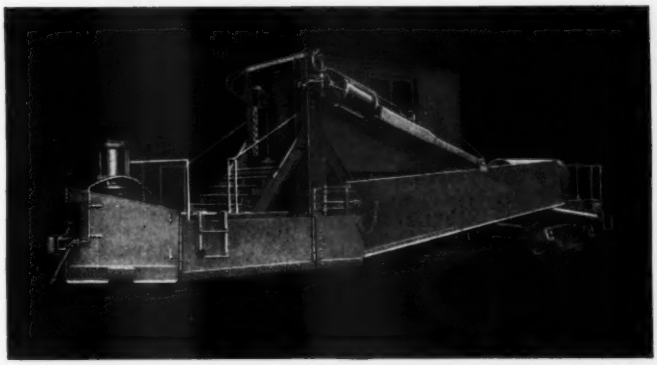

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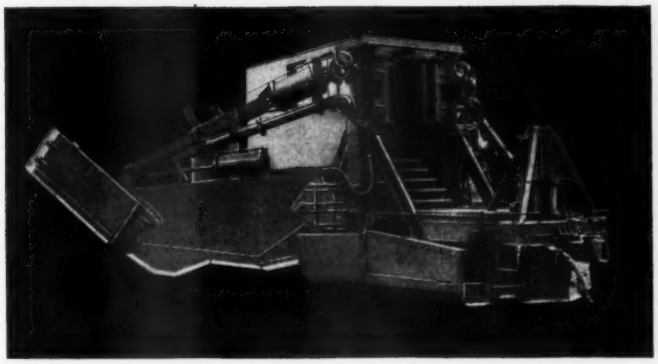

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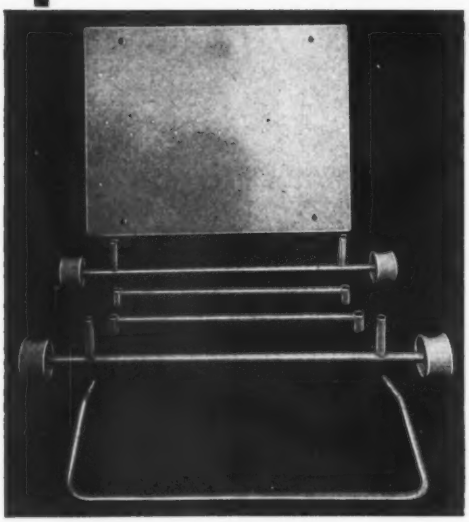

Can be set up or dismantled in *less than a minute* for easy loading into a truck, bus or motor car. Send for bulletin #186

CONSERVE THE ENERGY OF YOUR MOBILE TRACK GANGS WITH THIS WOOLERY TRACK TOOL TRANSPORTER!

This handy, light-weight push car carries tools to the job site from the nearest crossing or other point where truck or bus must stop. *Men arrive fresh and ready for work having been spared the laborious job of toting hundreds of pounds of tools and equipment—saves time—and muscles—for the important job!*

Rolls easily on anti-friction bearings even when fully loaded.

Handle can be inserted on either side for pushing in either direction.

Weighs only 160 lbs—yet will carry a thousand pounds of tools or materials! This is due to the novel steel-reinforced weather-proof plywood deck construction. *Light—but amazingly strong!*

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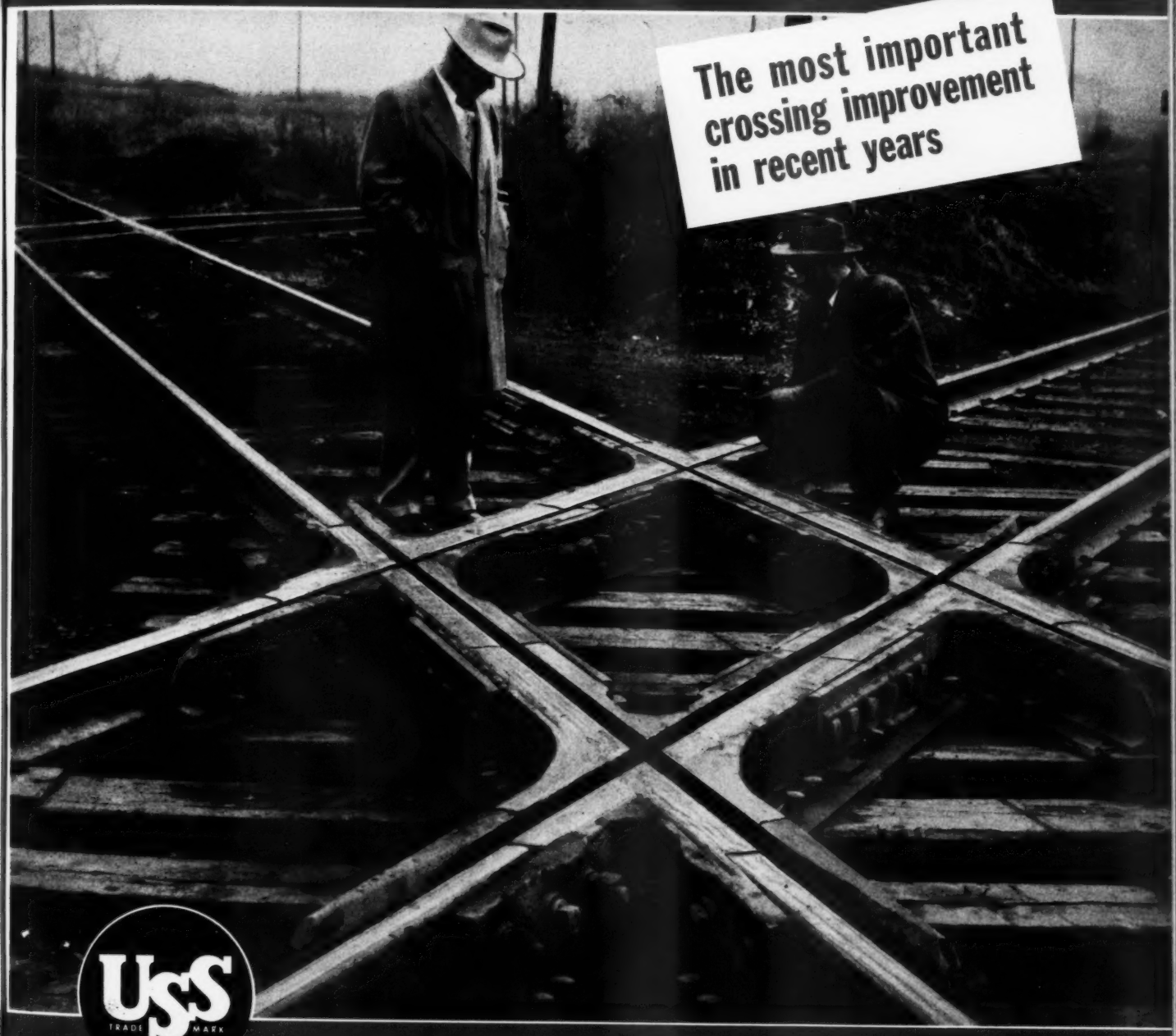
U·S·S MANGANESE STEEL RAILROAD CROSSINGS

with solid-pedestal base and depth-hardened corners



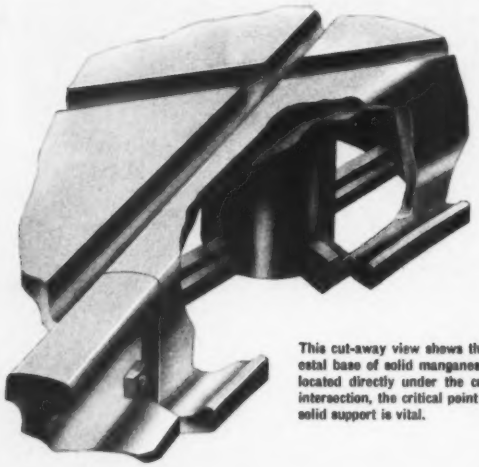
USS TRADE MARK

ADVANTAGES of the Solid-pedestal base

- extra support under crossing intersections
- longer life
- improved physical properties
- sounder metal

Stronger . . . safer . . . and more durable

U·S·S MANGANESE STEEL



This cut-away view shows the pedestal base of solid manganese steel located directly under the crossing intersection, the critical point where solid support is vital.

Solid-pedestal base adds strength where strength is needed.

A solid pillar of tough manganese steel directly under all crossing intersections is the exclusive feature that distinguishes this newly developed crossing. Here, where maximum strength is required to resist the destructive pounding of today's faster, heavier trains, the U·S·S Manganese Steel Railroad Crossing is extra strong.

The solid-pedestal base, an integral part of the casting, substantially reduces deflections resulting from wheel impact, a major cause of internal cracks that ultimately lead to complete deterioration of crossings. This vertical pillar of solid metal, rigidly reinforced, is far stronger than any other type of intersection support used today.

Metallurgical advances have improved new U·S·S Manganese Steel Railroad Crossings in still another way. By using more feed-metal (5 to 10 times more than is used in ordinary crossings) and exercising closer control over feeding, liquid metal under greater pressure flows unrestricted at the proper time to the solidifying area, preventing the formation of many of the pores and cavities characteristic of manganese castings.

Thus, in addition to the extra vertical support provided by the solid-pedestal base, the entire casting is sounder, freer of internal flaws, and less susceptible to spalling, chipping or cracking.

COMPARE THESE DIAGRAMS

THE OLD WAY

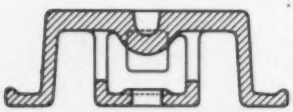


FIG. 1

Top and cross-section views of the old-style manganese steel railroad crossing. Note the numerous ribs required for bracing the intersection. Here, where wheel impact is most severe, the ordinary crossing is hollow . . . a construction that invites failure.

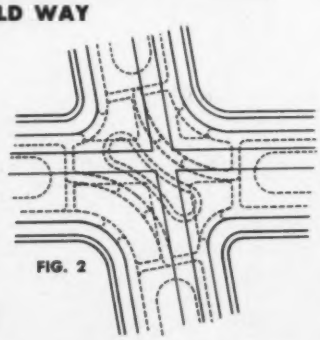


FIG. 2

THE NEW WAY

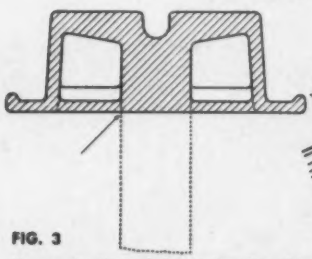


FIG. 3

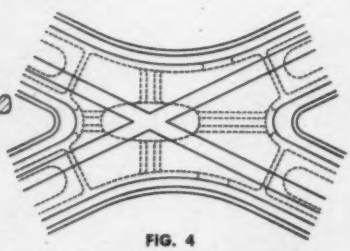
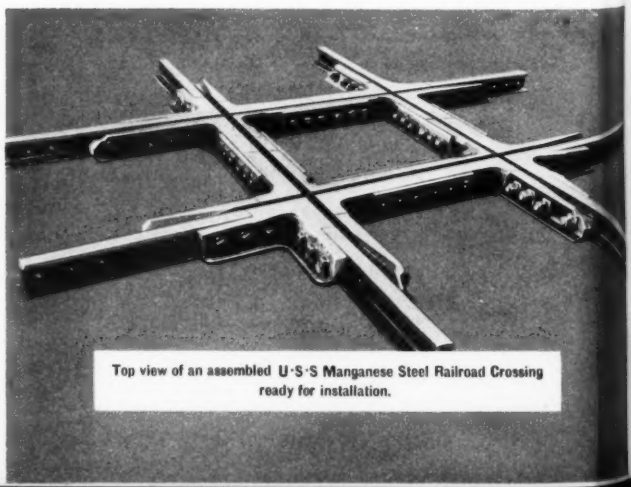


FIG. 4

Here, under the track intersection, the solid-pedestal base of the U·S·S Manganese Steel Crossing gives firm, additional support where extra strength is needed. The dotted portion in Fig. 3 indicates the size of the reservoir head that is cast integrally over the crossing intersection (inverted when cast). This reservoir (or riser) weighing from 200 to 350 lbs. is cut off and scrapped after the casting has solidified.



Top view of an assembled U·S·S Manganese Steel Railroad Crossing ready for installation.

RAILROAD CROSSINGS

lower in maintenance
. . . smoother riding

Depth-hardened corners reduce maintenance costs . . . assure smooth riding from the start.

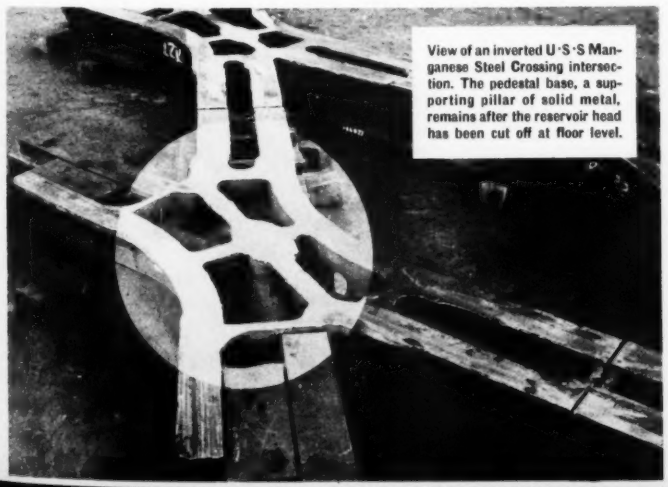
Depth-hardening is another valuable, money-saving feature of the improved U·S·S Manganese Steel Railroad Crossing.

The ordinary manganese steel crossing is produced to a surface hardness of approximately 200 Brinell. The wheel impact of the first long train is depended on to work-harden the surface to approximately 400 Brinell—the hardness required to stand up under modern rail traffic.

Though crudely effective, this wheel pounding also batters down the intersection corners—makes it necessary to build them back to normal track level repeatedly by welding and grinding. This costs money.

In contrast, the improved U·S·S Railroad Crossing has raised pads cast integrally on the three critical crossing corners of each intersection. These are shop-hammered to develop the desired hardness, and then ground down to track level to assure smooth riding. This controlled pre-hammering insures the proper depth hardness *before* installation, eliminates almost entirely the damaging effect of subsequent wheel batter, and virtually eliminates maintenance costs.

U·S·S Manganese Steel Railroad Crossings are also available without the Depth-Hardened treatment.



View of an inverted U·S·S Manganese Steel Crossing intersection. The pedestal base, a supporting pillar of solid metal, remains after the reservoir head has been cut off at floor level.

ADVANTAGES of the Depth-Hardened Corners

- pounding down of corners after installation virtually eliminated
- maintenance costs greatly reduced
- longer life due to less intersection failures
- smooth riding without rebuilding

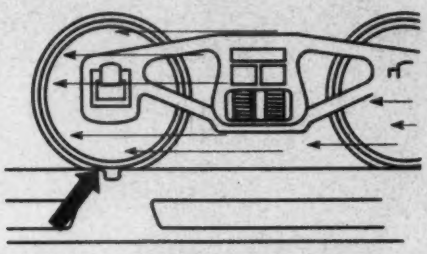


FIG. 5 This is what happens to the corners of ordinary manganese steel crossings as the first long train batters across its intersection. Before wheel pounding increases surface hardness to approximately 400 Brinell, the corners are pounded down about ¼", thus requiring extensive rebuilding.

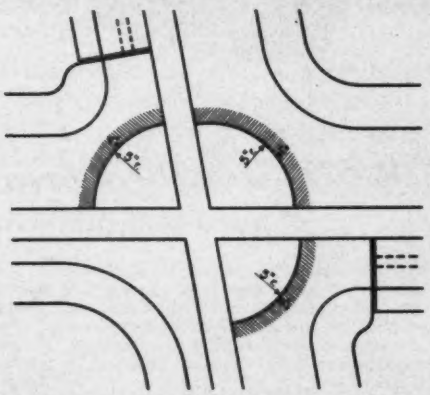


FIG. 6 Diagram showing top view of the new U·S·S Depth-Hardened Crossing. Note the ¾" x 5" pads on the three critical corners. To provide sufficient hardness, these pads are shop-hammered down prior to installation of the crossing.

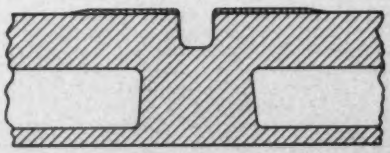
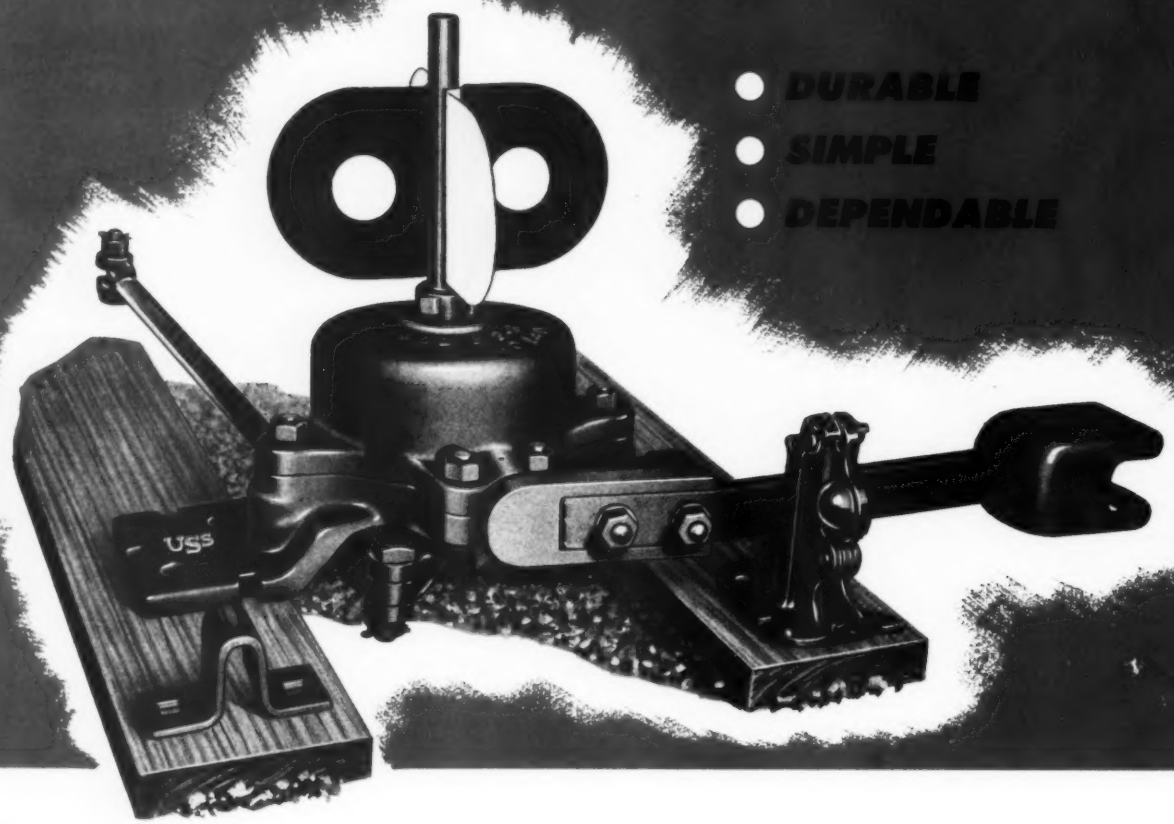


FIG. 7 Cross-section view shows pads cast integrally with the crossing, before being peened down to proper track level under forging hammer.

The Depth-Hardened Crossing can, for all practical purposes, be installed and forgotten. Maintenance requirements are negligible. Interruptions of service are rare. What's more, it lasts longer! The destructive impact of wheels dropping from a normal level to a depressed level, the major cause of early formation of cracks in ordinary crossings, is minimized.

U·S·S NO. 140 *Improved* SWITCH STAND



- DURABLE
- SIMPLE
- DEPENDABLE

Modern Design assures efficient operation of yard and main line switches

THIS modern, heavy-type switch stand is consistent in design and quality with present-day trackwork standards. It conforms to the A.R.E.A. specifications for ground throw switch stands. It is automatic unless locked in position with latches.

The U·S·S No. 140 Improved Switch Stand is recommended for either main line or yard use. Construction throughout is engineered and built to assure safe, dependable, long-time service. The base and cap castings are large and strong. The large bearings reduce to a minimum the amount of wear and prevent any wobble of targets and lamps. The spindle is locked to the segment in a square connection. When assembled, the spindle, segment and target rod form one unit and ease of adjustment is obtained by the removal and replacement of one bolt. The hand lever socket and pinion is made integral with a connecting shaft, thus eliminating the possibility of either lever or pinion working loose on the bearing shaft.

The threaded lever at the base of the spindle is adjustable for any desired throw of switch points from 3″ to 7″.

This stand is furnished with the following variations: *(1) With low, intermediate, or high target and lamp tip. (2) With lamp tip only—no target. (3) Spindle Cap—no target or lamp tip, but with provision for either if required.*

All target rods have standard lamp tips forged integrally, thus eliminating a separate part.

Standard target heights are—low, 1′6″, intermediate, 4′6″, and high, 6′6″. Standard red and white targets will be supplied when required, but special patterns or colors can be furnished.

When switch stand is ordered for rigid split switch, the short rigid connecting rod is included. When ordering for spring split switch, no rod is furnished unless otherwise specified, the long connecting rod being part of the head rod of the spring split switch. If desired, a short spring connecting rod can be furnished with the stand to connect to any switch with a rigid head rod.

When stands are ordered separately, customer should specify the thickness of head rod on switch, also diameter of hole in head rod.

One latch and one rest are generally furnished with stands for rigid split switch, and two latches for spring split switch.

All these fittings may be rearranged to suit customer's requirements.

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- **U·S·S TIE PLATES**
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- **U·S·S FROGS**
- **U·S·S CROSSINGS**
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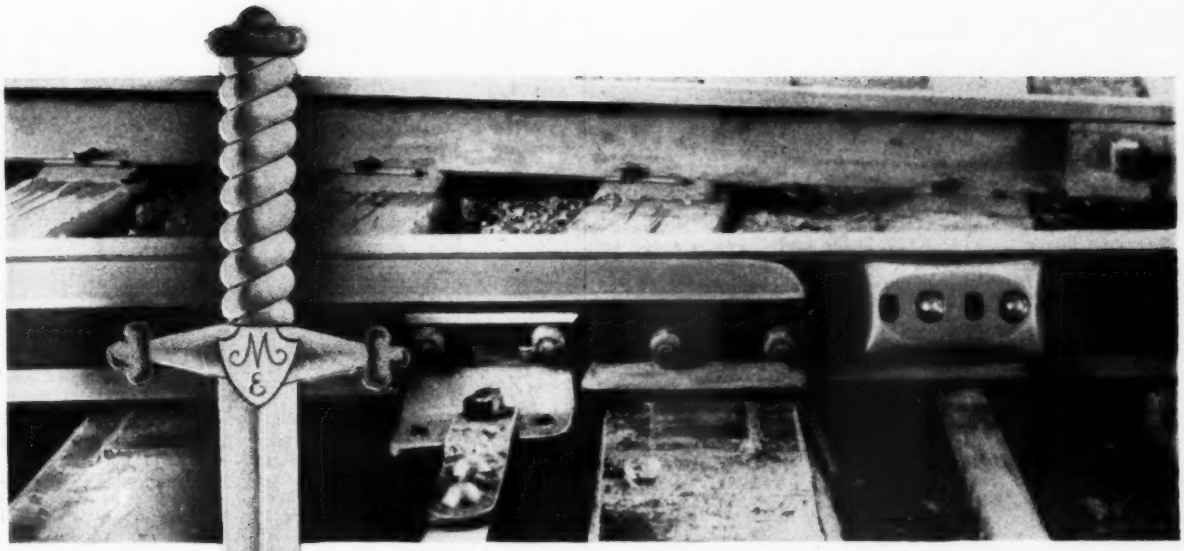
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. · UNITED STATES STEEL EXPORT COMPANY, NEW YORK

UNITED STATES STEEL



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The MACK *Reversible Switch-Point Protector* shifts wheel flanges away from the switch-rail point, tranferring wheel flange wear to a thicker part of the switch rail.

When the MACK *Switch-Point Protector* is first applied, it prolongs switch rail life 4 to 5 times. The MACK *Protector* is then removed, reversed, and re-applied, and is ready to extend switch rail life another 4 to 5 times. This means saving the cost of 8 to 10 switch rails, together with the time and labor otherwise required for 8 or 10 replacements.

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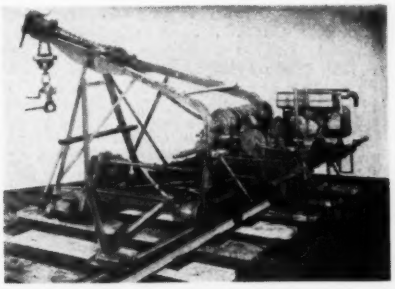

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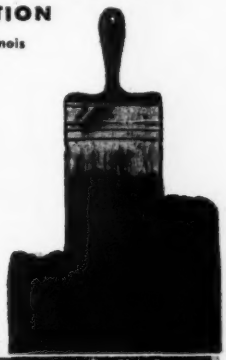

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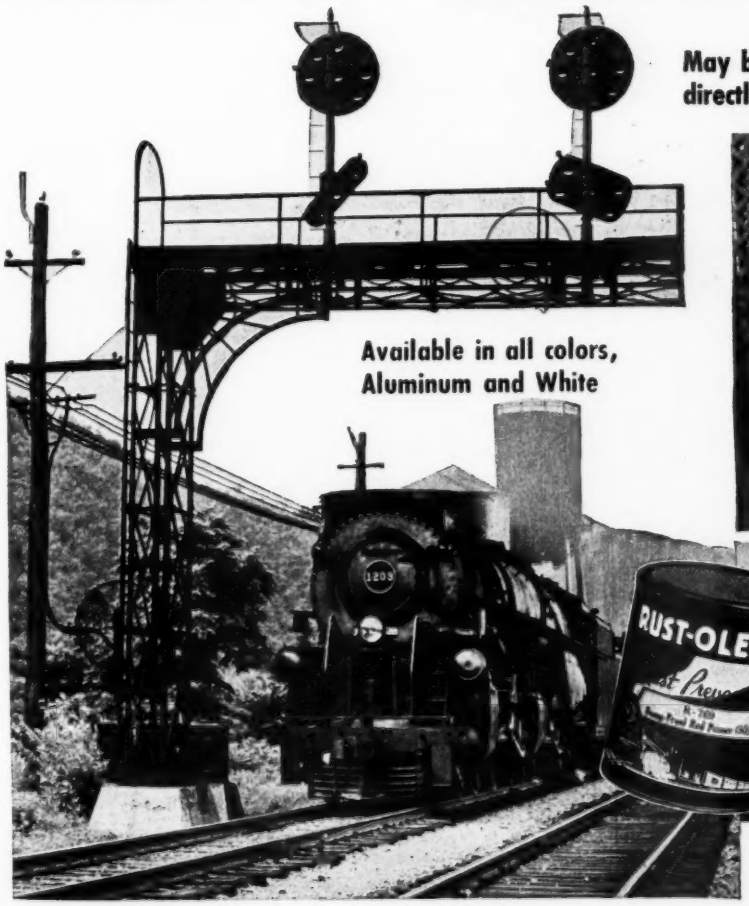

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No other bearings give you all the advantages you get with Timken bearings. Specify them in the equipment you build or buy. Always look for the trade-mark "Timken" on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ont. Cable address: "TIMROSCO".

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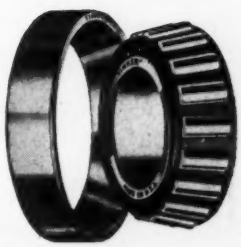

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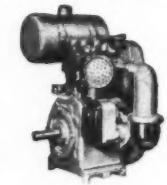
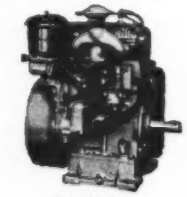
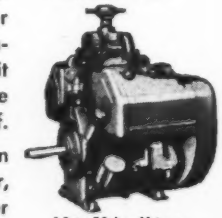


3 to 9 hp. single-cylinder models.



7 to 13 hp. 2-cylinder models.



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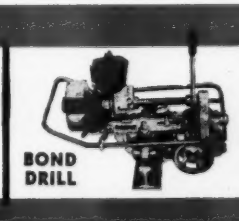

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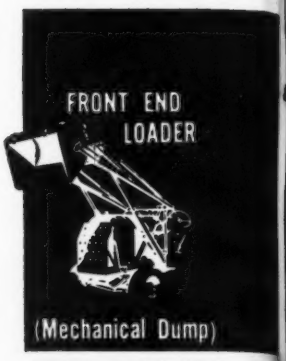
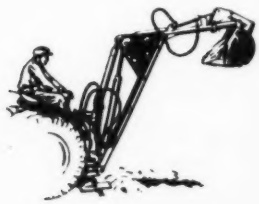
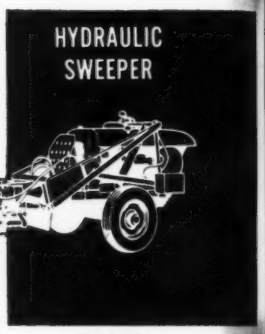


PIPPIN BACK HOE





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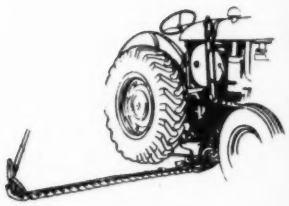

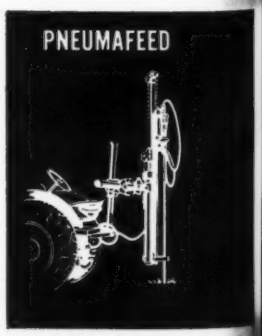

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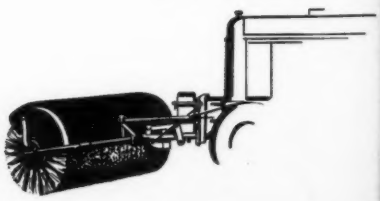
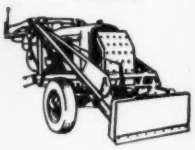


5′ BACKFILL BLADE



(Mechanical)

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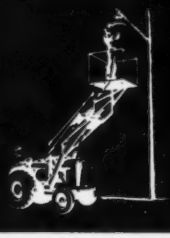
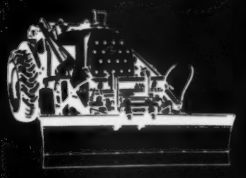


FRONT END LOADER

(Hydraulic Dump)

7′ BACKFILL BLADE



(Hydraulic Angling)

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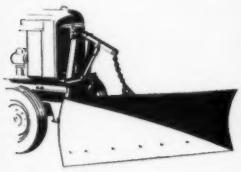

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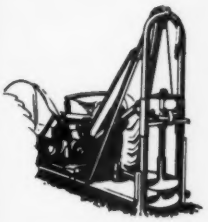
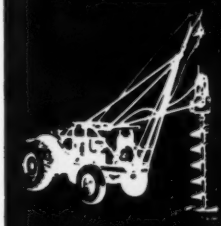
POST HOLE DIGGER

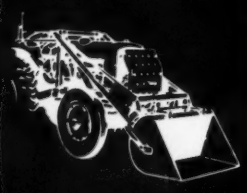


EARTH AUGER



OTTAWA BACK HOE

SNOW BUCKET



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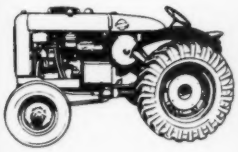
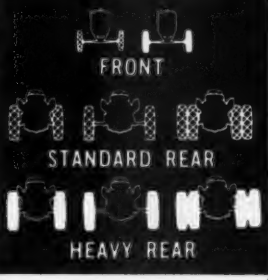


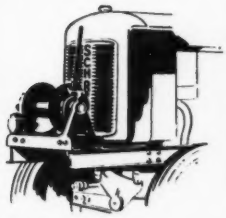
WHEEL ARRANGEMENTS



OPERATORS CAB

REAR WINCH

FRONT WINCH



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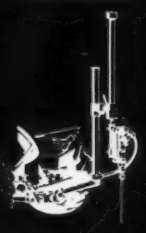


CLAY SPADING

BACKFILL TAMPING

PNEUMABREAKER

CONCRETE BREAKING

DRIVING SHEETING

TIMBER SAWING

PNEUMADRIVER

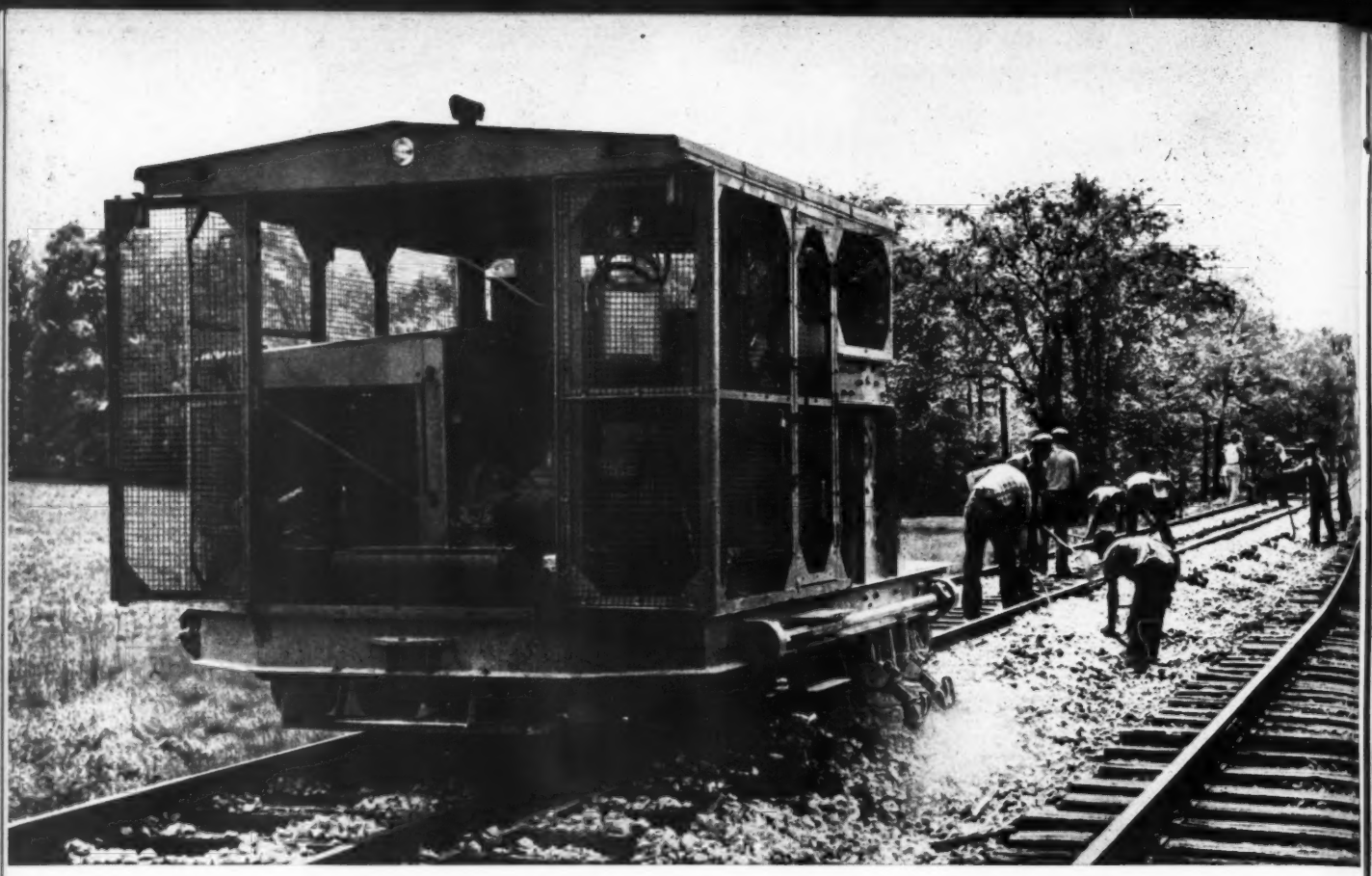
AND A 1000 OTHER USES

•

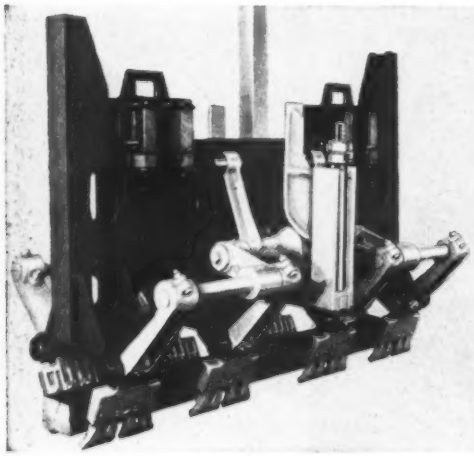
SCHRAMM INC.

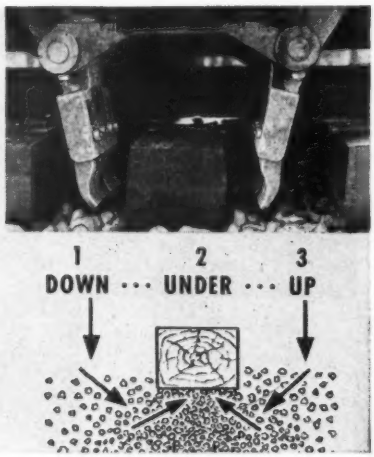
WEST CHESTER

PENNSYLVANIA



Mile after mile you get higher quality track at lower cost with the Power Ballaster. In all types of ballast, this versatile mechanical tamper handles smoothing jobs or high lifts with equal facility. The true cross-level tamping, uniform compaction, and minimum track settlement you get from the Power Ballaster means longer lasting track. Records kept by the Erie and other leading railroads conclusively prove that a longer period between maintenance cycles is obtainable when the Power Ballaster is the production tamper used.





Seven reasons why the Power Ballaster produces better quality, longer lasting track: 1. Exclusive cam and tamping bar design combine to produce triple-action ballast compaction; 2. tamping bars squarely address the tie, facing each other to uniformly compact a squared ballast foundation; 3. free falling head applies tamping force equally to all bar positions providing uniform compaction; 4. 32 tamping bar positions produce the proper compaction on each side of and under rail; 5. a readily made adjustment regulates the depth of application of tamping force; 6. five types and sizes of interchangeable tamping bars to meet any raise or ballast specification, and 7. linkage system progressively increases force applied to each tamping bar producing maximum under-tie compaction.

Above: Photo and sketch show how these exclusive design features combine to enable the Power Ballaster to tamp in strict accordance with the time-tested standards and methods established for production tampers by the A. R. E. A.

Blair Blowers, Chief Engineer, Maintenance of Way, tells how the Erie was able to reduce track maintenance costs by using Pullman-Standard Power Track Ballasters. (see next page)

SUBSIDIARY OF

ROAD & TRACK EQUIPMENT DIVISION **PULLMAN**

BIRMINGHAM • PITTSBURGH • NEW YORK • WASHINGTON • SAN FRANCISCO • 79 EAST ADAMS STREET

Pullman-Standard POWER BALLASTERS

Uniformly tamped ballast means long track life . . . and this is one reason why Power Ballasted track has longer lasting qualities and requires less rework. Inspections after three, four, and five years of heavy duty traffic reveal that the uniform support given to track by the Power Ballaster's triple-action compaction means a longer period between maintenance cycles and faster, safer, smoother transportation.

produce longer lasting track

Besides its unequalled ability to produce under-tie ballast compaction to AREA specifications (the only production tamper able fully to meet these specifications), the Power Ballaster answers the demands for high production at low costs. Normal production rate is 500 to 700 feet an hour with a minimum labor requirement of 10 to 15 men. Only one operator is needed to run the machine. Because of the Power Ballaster's efficient and rugged design, the operator can make minor repairs and adjustments at the work location. Not only is this mechanical tamper self-propelled—with a running speed of 25 mph.—but it has a self-powered set-off mechanism which enables four men to set the unit off laterally in 3 to 5 minutes. Delays due to train interruptions are thus reduced to a minimum.

at lower costs for the Erie

These are the reasons why the Power Ballaster produces higher quality, longer lasting track than any other production tamper available today. You can prove it while tamping your own ballast. Choose one of these four ways:
(1) outright purchase; (2) rental for ninety days, with option to buy; (3) straight rental for a minimum period of three months; (4) deferred quarterly payments over a period of 1 to 3 years. The rentals and deferred payments are established at substantially less than the realizable savings accruing during the payment periods.

ERIE

"The Erie Railroad has in operation four Power Ballasters. Because of this machine's exceptional production rate, low labor requirements, and powerful triple-action compaction, we get a lower cost per tamped foot than we ever believed possible.

"Further, we regularly inspect track tamped with the Power Ballaster by removing some of the ties. We find the under-tie compaction uniform, with exceptionally good compaction of stone under the rail. The first track tamped by the Power Ballaster method on the Erie four years ago is still riding good."

Here's what YOU can expect from your POWER BALLASTER:

- Longer Lasting Track
- More Production—Lower Labor Requirement
- Long Equipment Life
- Maximum Use of Track Time
- Easy Operation and Maintenance
- Universal Application—Versatile Production

Your Assurance: PULLMAN-STANDARD has been one of the great U. S. railroad equipment suppliers for 73 years; its time proven integrity and reliability are behind the POWER BALLASTER to protect your equipment investment and to assure a factory stand-by of spare parts and continuing factory service.

Write for Booklet containing complete detailed engineering data and operating facts about the POWER BALLASTER.

You are cordially invited to visit the Pullman-Standard Industrial Showroom when in Chicago.

PULLMAN INCORPORATED

PULLMAN-STANDARD CAR MANUFACTURING COMPANY

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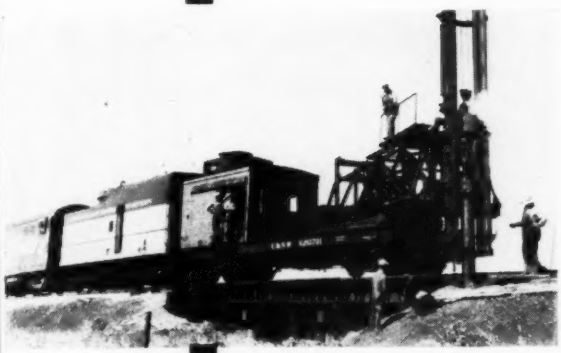
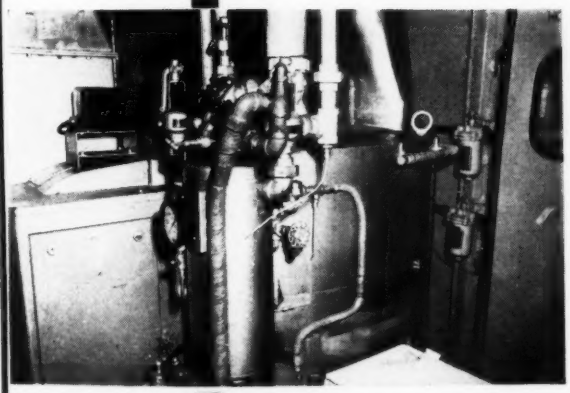
Water storage tank holding 11,000 gals. at rear of car, together with diesel fuel oil supply, permit car to work 10 days or more without refueling on pile-driving jobs, or to heat a passenger train from Chicago to the west coast.



Automatic controls ...plate firing of the generator so that steam is produced only as ...ded. On pile-driving job in photo above, 200 lb. of steam ...ated double-acting hammer at a steady 115 strokes per mi...



Vapor-Clarkson Mo... 4635 Steam Generator has special automatic stand-by ke...arm controls which cause it to fire up every four or five ...rs, for about 15 minutes, when idle in winter, to keep fu...nd water warm in tanks and avoid necessity of draining ...s.

How to Make a Mobile Steam Plant out of an old locomotive tender

Cut away parts at forward end of tender tank so a room with side doors can be formed for housing a Vapor-Clarkson Model 4635 Steam Generator and other equipment (layout below) constituting a multi-purpose mobile power plant able to:

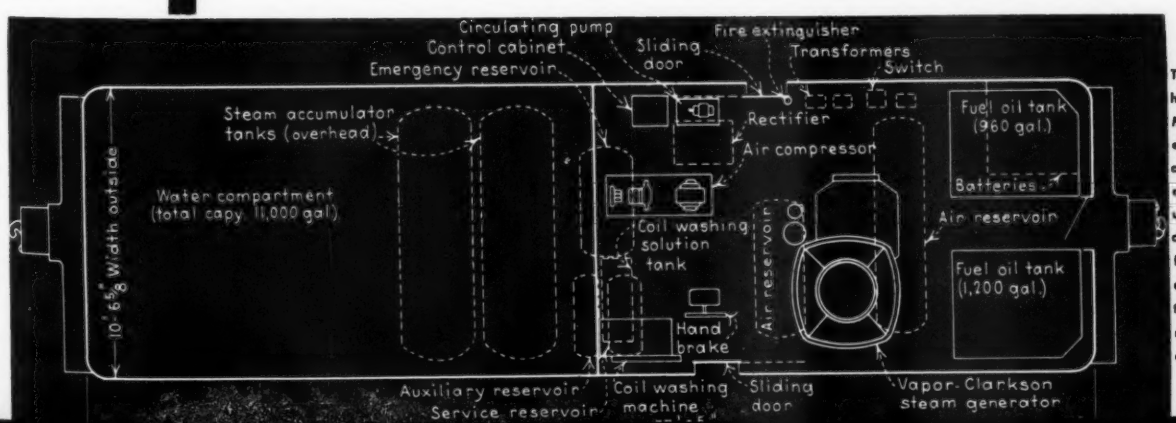
- **furnish steam for driving pile-hammer**
- **augment steam supply for diesel-drawn passenger trains in winter**
- **heat or cool special trains on sidings**
- **furnish emergency source of steam for power plants or stations**
- **supply steam for wrecking cranes**

The Vapor-Clarkson Model 4635 Steam Generator is the same type (flush type) used on passenger-train diesels for supplying steam to heat cars. It will produce 1,000 to 3,500 lb. of steam per hour at 75- to 300-lb. pressure,—enough to operate a large double-acting pile-driving hammer or to heat a train of average length. In two minutes it will develop 200 lb. of steam pressure from cold water.

Write us for complete details of this car and the Vapor-Clarkson Model 4635 Steam Generator.

VAPOR HEATING CORPORATION

80 East Jackson Blvd., Chicago 4, Illinois



The converted tender houses Vapor-Clarkson Model 4635 Steam Generator, fuel tanks, and air compressor, driven by electric motor. Brackets under tender frame carry diesel-electric generator for making current to drive a 5-h.p. motor on the steam generator, one on the air compressor, and for train lighting.

It costs money to repair this bridge.....

NO-OX-ID *eliminates this metal loss!*

Replacing rust-ruined steel bridge members is expensive . . . it's unnecessary, too! Because you can conserve vital materials and man-hours by preventing corrosion with NO-OX-ID Rust Preventives.

Wherever metal surfaces are exposed—on bridges, water tanks, structures, railroads—wherever steel is used, NO-OX-ID prevents rust with one coat. No expensive re-scaffolding is required. Ask your Dearborn Engineer to recommend the NO-OX-ID combination best suited to solve your corrosion problems.

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IRON + = RUST

THE ORIGINAL RUST PREVENTIVE

Shaping up the Southern right-of-way for better drainage, this International TD-14 crawler works in close quarters along the right-of-way.

Keeping the High Iron Dry

Working on the Southern's Main Line to Mobile

The Southern Railway's main line to Mobile needed right-of-way drainage work. So, once again, the railroad put a dependable TD-14 International crawler on the job. Teamed up with a six-yard scraper, the tractor dug and hauled fill to low spots along the line.

"This tractor has been working for the railroad for a long time, and it has seen a lot of hard service in the last four years. But it really puts out a full day's work. It handles just the way I want it to in close quarters along the tracks," says A. E. Tyler, TD-14 operator for the Southern.

You'll hear the same story from railroad maintenance-of-way men on the high iron from coast to coast. Fast-moving, easy-handling Internationals help operators get more work done—keep working while your revenue traffic rolls by.

These are some of the reasons why International is the "Power that Pays". Let your International Industrial Distributor give you the whole story. Put "Power that Pays" to work for you.

INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILLINOIS

INTERNATIONAL

INTERNATIONAL HARVESTER

POWER THAT PAYS

No. 285 of a series

Railway Engineering and Maintenance

SIMMONS-BOARDMAN PUBLISHING CORPORATION
79 W. MONROE STREET
CHICAGO 3, ILL.

Subject: Using Published Articles

September 1, 1952

Dear Readers:

Frequently we receive written or verbal requests from readers for references to articles that have been published in Maintenance. We are happy to have these indications of interest in our magazine, and ordinarily we are able to obtain the information quickly simply by referring to the annual indexes. Sometimes these inquiries are accompanied by a request for tear sheets of the article in question. If the write-up has appeared within the last few years, we are usually able to obtain tear sheets from our files of loose copies; but if it goes back too far it is necessary to have photostats made from our bound volumes.

We have been interested to note that most of these requests apply to articles of the "how" type—articles that describe procedures and equipment used to carry out particular types of construction or maintenance jobs. At the time the article was published, a subscriber may have read it merely with passing interest, only to encounter the same problem himself several years later. Remembering the article, he endeavors to locate it in order to determine how the problem was handled by others. In this issue, for example, there is an article telling how the Santa Fe shifted a double-track truss span longitudinally 50 ft. It is a practical certainty that at least some of our readers will some day be confronted with a similar project. It is a fair assumption that the Santa Fe article will then prove of real help.

How can you, as a reader, assure yourself that you will be able to lay your hands on a particular article if a need for it should develop? One way is to keep a file of back issues and to request us to furnish you each year with a copy of the annual index. Another is simply to keep a file of tear sheets of articles you find to be of particular interest. We know of a water service engineer who keeps tear sheets of all the articles we publish on water service matters. Others, however, may wish to be more selective, filing only those articles that you feel might be of use to you in the future.

After all, no matter how carefully you read an article, it will be impossible, unless you have a remarkable memory, to keep all the pertinent details in mind indefinitely. For this reason, one of the several suggestions made in the preceding paragraph may prove helpful. Please understand, however, that we in the office will always be happy to help you find a particular article, and may even be able to make suggestions regarding other articles on the subject that may have escaped your attention.

Yours sincerely,

Mervin H. Dick

Editor

MHD:amj

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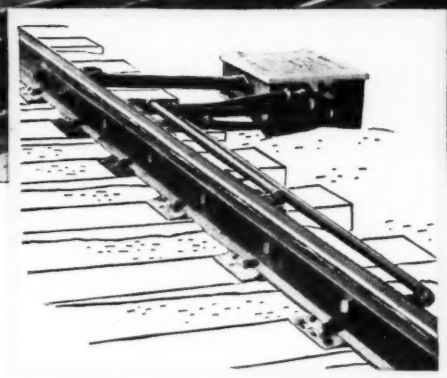
Racor model 4000-A

RAIL LUBRICATORS

(Patented)



Effectively reduce curve resistance and wheel flange wear on the scenic Denver & Rio Grande Western

The improved RACOR Model 4000-A Rail Lubricator is specially designed to retard wear of track structures and car wheels. It is an important contribution toward the reduction of high maintenance costs of equipment and track. Increased tonnage ratings are obtainable in mountain territories by curve lubrication. Racor Rail Lubricators facilitate the control of more uniform movement of cars in classification yards thereby reducing damage to equipment and lading.

It will pay you to investigate the RACOR Model 4000-A Rail lubricator. Write today for complete descriptive circular.

"USE RACOR SPECIAL TRACKWORK WHERE STRESS AND STRAIN ARE GREATEST"

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109 North Wabash Avenue, Chicago 2, Ill.

RACOR

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AND WORK EQUIPMENT

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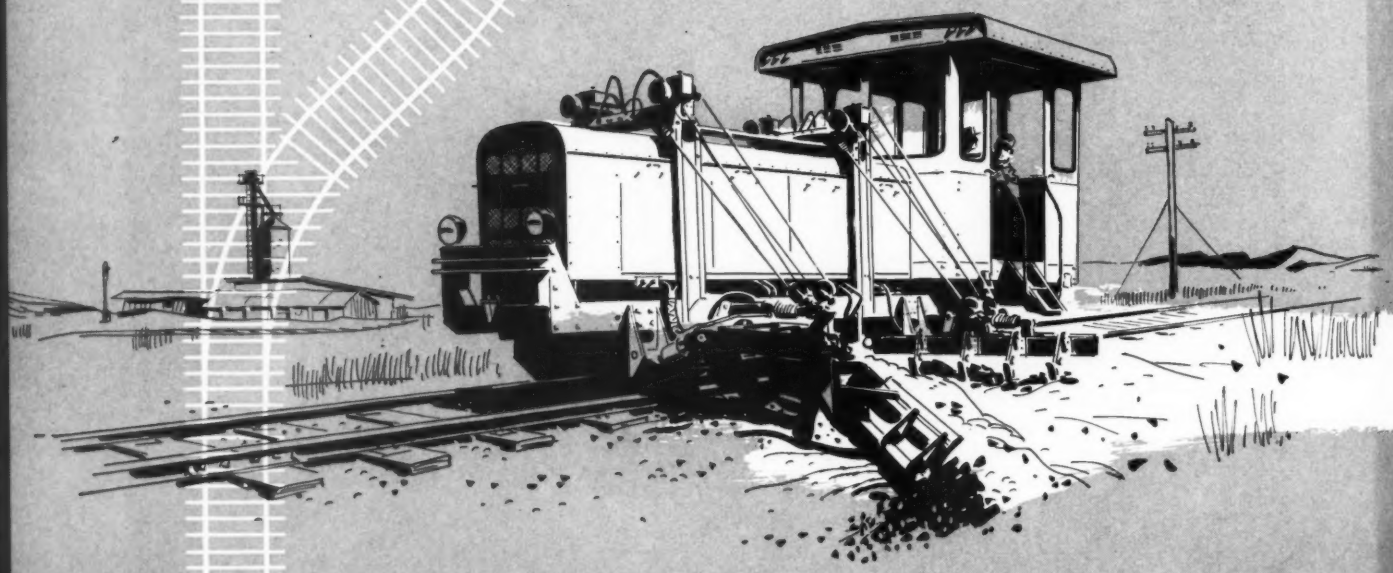

Performance ON THE JOB COUNTS

The statement made in this headline applies to virtually every phase of railway maintenance—and to every piece of equipment that Fairmont produces. But it is *doubly* true of the W77 Series A Ballast Maintenance Car pictured above. For here, beyond any question, is the finest solution the industry has yet developed for this ever-present problem. By mounting scarifiers, discs, ballast equalizing boxes, two sizes of blades and a center plow, the W77 Series A Ballast Maintenance Car provides the fastest, finest and most economical method of maintaining road-bed ballast available today. Its masterful 112 h.p. engine, with its eight speeds and its two-way, four-wheel drive, guarantees dependable and brilliant performance under almost any operating conditions. This remarkable Fairmont product is positive proof that Fairmont builds to perform where performance really pays off—*on the job!*

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these FEATURES OBTAINABLE IN NO OTHER TYPE OF CROSSING CONSTRUCTION:

THE CONDON Steel Grating Highway Crossing is revolutionary in its design and accomplishment . . . representing a progressive step in the construction of highway crossings. The Condon Crossing will accommodate any rail section. The deck elements . . . even the steel underframes . . . are readily removed for track and ballast maintenance. It costs less *installed* than other type crossings, since it lasts 2 to 4 times longer.

The Condon Steel Grating Highway Crossing is adaptable to either straight, tangent or curved track. If you will submit your problem to us, Morrison engineers will give you a detailed proposal. If you would like a quick preliminary cost estimate, give us the track feet of the crossing area and we will give you a close cost approximation. There is no obligation of course.

- **LOWEST MAINTENANCE COST** Nothing to Crack, Soften or Disintegrate because of seasonal change. All steel construction means it lasts 2 to 4 times longer.
- **INEXPENSIVELY INSTALLED** Except for highway headwalls when necessary, existing track ties constitute the only necessary foundations. Adaptable to straight, tangent or curved track.
- **REMOVABLE SECTIONS** Easily lifted for tamping, ballast cleaning or track surfacing work. Accommodates any rail section and permits track raising.
- **EXCELLENT DRAINAGE** Self-cleaning because 80% of deck area is open. Assures normal longitudinal track drainage.
- **SAFE . . . STRONG . . . SMOOTH** A more tractive, non-wearing surface that is strong and requires no crowning.

MORRISON
RAILWAY SUPPLY CORP.

Gang Output—

A Formula for Assuring Progressive Improvement

Probably the greatest single problem confronting maintenance supervisory officers today is to get more production per man-hour from the work gangs under their supervision. This statement is made in full knowledge of the fact that much progress has already been made, and that on some lines the advances have been so substantial that it may seem the end of the road has been reached. As a matter of fact there is no end to the road; no matter how much progress toward greater efficiency has been made in the past there is always some further step — a new machine, or an improvement in organizations — that will result in better performance.

Consider the recent experience of a railroad that has long been known for the efficiency of its track-maintenance gangs. Over a period of years this road had been making steady strides in the organization and equipment employed by the gangs it uses for renewing ties and raising and tamping track. By 1951 these gangs appeared to be at a peak of efficiency. They were fully mechanized, using the latest equipment, were so organized as to utilize the men and equipment to the best advantage, and had an extremely high rate of production.

However, still not satisfied with the performance, the road's maintenance officers made a further careful study of these gangs, as a result of which the equipment consist of one of them was altered in several respects, including the addition of a single machine. As a result of these simple changes, and with practically no change in the number of men, the average daily output of the gang was increased about 50 per cent.

It may be argued that, since the output of this gang reacted so sharply to relatively minor changes it must have been poorly organized to start with. Nothing could be further from the truth. By the highest standards of measurement in use anywhere, the gang was already an extremely efficient, highly integrated unit. The possibilities for further improvement were discovered only through careful analysis and study, motivated by a determination not to overlook any opportunities for betterment. Obviously, such an attitude is proving profitable on this road, and will continue to pay dividends in the future.

Practically all progress, whatever the field of endeavor, is the result of evolution. At least insofar as material progress is concerned there is nothing certain or automatic about this process. It occurs only as a result of thought and effort, and it takes place at a rate more or less in proportion to the amount of energy and skill devoted to the solution of problems.

Railroad maintenance men can hurry the evolution of their forces toward a state of higher efficiency. Steps to this end are taken every day. The example cited above proves this point. It cannot be done, however, if there is any tendency to be satisfied with the progress made to date. Rather an attitude of "constructive dissatisfaction" is needed if a stalemate is to be avoided.

CROSSTIE RENEWALS—

Better Methods Always in Order

MORE opportunities exist for improving ways of renewing crossties than for any other track-maintenance operation. Those opportunities are open not only to the maintenance officer for effecting new methods of work, but also to equipment manufacturers for designing devices to mechanize tie renewals.

Two years ago a subcommittee of the A.R.E.A. Committee on Maintenance of Way Work Equipment found this latter fact to be true when it canvassed all member roads for suggestions for new equipment that should be made available. Since then a number of such new machines, some of which were under test when the report was prepared, have been made available. Coincident with their appearance, new methods have also been devised for effective use of the new devices. To state that great opportunities still exist to improve methods and machines for renewing ties does not disparage these efforts of maintenance officers and manufacturers. On the contrary, it merely directs attention to the enormity of the need and infers that where the possibilities for economy are so great, satisfaction is generally ephemeral.

In tie-renewal work this has been more than ever true. Few other track-maintenance operations have remained in a state of flux for a longer period. Not so long ago maintenance officers on some roads decried the "digging in" of ties as contributing to rough track. These men championed the track-raising method of tie installation and seemingly proved their point for in some sections of the country ties were dug in only in small quantities by section forces. However, some of the equipment recently made available has been built around the "digging-in" principle. With such devices economies have been made and the riding qualities of the track improved.

On the other hand, equipment has also been evolved to assist in the renewal of ties while raising track. Here also, costs have been lowered and smooth track has resulted. But even among the proponents of this system disagreement exists as to the sequence of operations, the intervals between them, and often the method of performing each phase of the tie-renewal work.

Here, too, cycles of popularity seem to exist. The method started by putting ties in "on the jacks" of a fork-tamped raise followed by pick tightening. After a while the picks were supplanted by air or other types of mechanical tampers. This system was soon altered to eliminate the fork raise. But, out of favor for a while, the fork raise is again becoming popular as a means of saving money in making tie renewals. Followed by mechanical tampers in a about a month this method is said to produce excellent riding track despite heavy traffic.

Thus practices which have satisfied one road for a time have failed to qualify on another or on the same road at a later date. Therein probably lies the crux to the situation. Resolve these differences of opinion and the tie-renewal problem will be licked. Perhaps a satisfactory solution can be evolved from free discussions at association committee meetings or conventions.

BUILDINGS—

Why Are Records Not More Complete?

ASK any chief carpenter, supervisor or general supervisor of bridges and buildings how many buildings he has under his jurisdiction and the chances are nine times out of ten that he will be unable to give a definite answer. Yet, if these same men are asked how many bridges are entrusted to their care, they will, in most cases, be able to state the exact number. Furthermore, by referring to their pocket bridge-record books, they can tell in just what part of a mile the structure is located, when it was built and strengthened, the type of construction, the length, the character of the foundation, restrictive overhead and side clearances, the name of the stream it bridges and the size of the opening.

Few railroads, however, have a numbering system or as complete a record of their buildings, which raises the question of why this is so. For one thing, it must be recognized that, when a bridge is lost from service because of fire, flood, underscouring, etc., all rail traffic is halted or must be detoured at great expense, thus making information relative to bridges of prime importance that proper measures may be taken to get men and materials to the site for restoring the structure to service—a situation that is not the same when a building is lost.

Yet, buildings have their place of importance in the transportation picture, and it would certainly seem desirable for chief carpenters and supervisors of bridges and buildings to have a numbering system for identifying each of their structures as well as a record that will be immediately available when needed. Such records would be very helpful during the annual building inspection since they would furnish data on the age of the structure, alterations made and maintenance work previously completed. They would also obviate the necessity of depending on memory for such information and will furnish valuable data to a successor.

Unlike bridge-record books, the building record might better be entered in a loose-leaf binder so that additional sheets might be shown in their proper places when buildings are added. Also, if entered on thin paper sheets, prints can be made for supplying the general office with copies. If one page is used for each structure, ample space will be available for showing information on heating, plumbing, lighting.

Such records of buildings would obviate the necessity of making laborious searches through the valuation records, subsequent A.F.E. files, and building work sheets of several years standing. They would, in many instances, preclude the necessity for making field trips to obtain desired information.

Steps in Gaging Procedure . . .

1 When the ties have been adzed and creosoted, men with special hooks pull the plates onto the ties. Two men follow with a sliding template

2 The plates are properly positioned on the ties by being pushed against the template

Milwaukee Road Uses

Innovations in Rail-Laying Practice

Special equipment and practices used by a rail-relaying gang on the Milwaukee Road have resulted in a material reduction in the time lost in turning machines and in the loss of productive time occasioned by machine failures on the job. Incorporation of a spot-tamping outfit makes it possible to leave the track in condition for high-speed operation at night. In addition, this gang has experimented successfully with a newly developed gaging machine.

• A number of innovations in rail-laying methods and equipment were recently witnessed during an inspection of a large rail gang working on the Milwaukee Road near Rondout, Ill. They included the provision of spare or standby units of certain equipment, the use of a special turntable car to permit the turning of the rail laying machines when this becomes necessary, and the inclusion of a spot-tamping outfit. Also, the gang was using experimentally the newly developed Dun-Rite gaging machine, which is manufactured by the Nordberg Manufacturing Company.

In nearly all major respects the equipment and organization of the gang working at Rondout conformed to conventional modern practice. The organization consisted of a general foreman, 9 foremen and assistant foremen, 118 laborers, plus two machine repairmen, a material clerk, a timekeeper and toolmen. The equipment, except for the unusual units to be mentioned later, was comprised of 3 adzers, 4 power wrenches, 3 spike pullers, 3 cribbing machines, 1 creosote sprayer, 1 rail crane, 4 spike drivers, 4 motor cars, 8 trailers, and 9 push cars.

Standby Units Provided

One of the unusual features of this gang, as mentioned at the outset, is the fact that it was provided with a number of standby units of equipment which could be put into service quickly in the event that others might fail in service. The emergency machines, which are in addition to those enumerated above, included 2 power wrenches, 1 spike puller and 3 spike drivers. Also, in line with standard practice on the Milwaukee, the gang was equipped with a spare rail crane which was held available at the camp for use as needed. The availability of the standby machines made it possible for the gang to continue work in the event of a machine breakdown without loss of time and without any redistribution of the men in the gang being required, thus preventing any disorganization or interruptions to the progress of the work.

New Gaging Machine Tried Out

A second major aspect in which the Rondout gang deviated from common practice was in the use of the Dun-Rite gaging machine. This machine was first described in the March 1952 issue of *Railway Engineering and Maintenance*. It rides one rail on a flanged dolly contoured to the rail head. A gliding shoe or runner, adjusted to the exact width of the base of the rail being laid, glides along the rail seats of the distributed new tie plates, bringing them to a line which produces exact gage of the running rail. This machine carries a multiple wood drill, driven by a gasoline engine, for boring holes simultaneously for two anchor spikes by inserting the bits through the anchor-

Gaging Procedure (Cont'd) . . .

3 Pushed steadily forward, the glider of the Dun-Rite machine alines the plates to true rail gage

4 Anchor-spike holes are bored in every third or fourth tie while the Dun-Rite machine glider holds the tie plates at correct gage

spike holes of the tie plates. The gaging machine is preceded by a sliding template by means of which the tie plates are placed in approximate alinement. In its original form, as developed on the Nickel Plate, the gaging machine also carried a spike hammer for driving anchor cut spikes and an air compressor which was driven by a gasoline engine.

Subsequent improvements made in the machine have included the removal of the spike hammer, air compressor and engine, with the result that the weight of the machine has been substantially reduced, while its mobility has been increased. Also, a detachable side frame with wheels has been developed for the glider side to permit the machine to be run along both rails to and from the job. When the glider is used, this side frame is detached and placed on outrigger arms on the other side of the machine where it serves as a counterweight. The gliding shoe has been equipped with rollers so that it is now unnecessary to daub grease ahead of the machine on the rail seats of the tie plates as was formerly done to reduce friction. Also, the glider is now constructed so as to be adjustable to various rail base widths.

As used by the rail gang on the Milwaukee, the template and gaging machine were operated directly behind the men placing the new plates on the ties and ahead of the rail layer. Two men were employed with the template. One man pushed it along the rail while the other, equipped with a tool having a flared end, pushed the tie plates in line against the template. The man pushing the template also distributed two special wood anchor plugs at every third tie in lieu of anchor cut spikes. These special plugs were of creosoted maple, were somewhat shorter than conventional tie plugs, and were each shaped with a head. Their purpose was to hold the tie plates in proper gage.

Three Men Do Gaging

Three men were employed with the gaging machine; two pushed it slowly along the rail while the third man, using the drilling machine, bored holes for the wood anchor spikes in every third tie. The drilling unit is mounted on the gaging machine by means of a roller carriage. This permits the gaging machine to be pushed forward at a steady slow pace while the driller is boring the holes in a tie; he then advances to the next third tie by rolling the drill forward on its independent carriage. Following behind the gaging machine were two men with short-handled mauls who started the special anchor plugs in the holes. A third man, with a long-handled tie-plug driver, drove them down.

Gage More Uniform

Not only did the use of the gaging machine result in a saving in manpower but the gage produced was found to be more uniform than is normally obtained when gaging by hand. From its experience so far with this machine, the road believes that gaging every third tie with anchor plugs will produce good and regular gage on curved track, while every fourth tie on tangent track should be sufficient for quality results.

The presence of a tie-tamping outfit in this gang comprised still another variation from common practice. As a result of a high degree of cooperation that exists on this road between the operating and the maintenance-of-way departments, traffic is "wrong-mained" in double-track territory for short distances between towns to permit the rail gangs to have complete use of the track on which rail is to be relaid. Traffic is routed over the other main track at normal speeds. While this necessitates that the men in the rail gang stop work and remove themselves to a safe distance while trains pass by, the long delays that would result if the machines had to be run to a siding, or set off the track, if rail traffic were not rerouted, are consequently eliminated.

Tampers Included in Gang

The officers of the maintenance-of-way department of the road, wishing to do their part in reducing delays to revenue trains, decided to incorporate in this particular gang an outfit for tamping up the former joint ties and any other swinging ties, the purpose being not only to prevent the rail from being damaged by traffic before the track could be surfaced, but also to leave the track in good operating condition at the end of the day so that it may be restored to traffic at full operating speeds at night, thus eliminating the slow orders that were formerly necessary. The tamping unit consists of six men, is equipped with a four-tool Jackson outfit, and follows immediately behind the spikers. Two men with picks loosen the ballast around the ties at the locations to be tamped, two others each operate a tamping

5 Special wood anchor plugs, previously distributed by man pushing template, are then started in their holes by two men using small mauls

6 Plates are held firmly in place after anchor plugs are tamped down with tie-plug driver

unit, while another man with a special tool nips the ties being tamped. A sixth man pushes the power plant along the rails.

By means of the special turntable arrangement mentioned at the outset of this article, the Rondout gang was able to turn the equipment for laying the opposite rail with a minimum loss in time. This device consists of three push cars of all-steel construction, coupled together. Along the sides of each push car are 2-in. steel pipes which are mounted above the car frame to form a standard-gage track on which the track machines can be rolled. Four rail stops, which operate somewhat on the principle of the hinged derail, are provided for each push car for use in preventing the track machines from rolling off when being transported on this device. The gaps in the round rails between cars are spanned by quick-detachable shorter sections which are lifted out before the outfit is moved to permit it to travel around curves. Removable sections are also provided for ramps at the ends of the outfit for facilitating pushing the track machines on and off the cars. Two of the cars have steel platforms so that they may be used for transporting tools or other small materials. The third car has a turntable instead of a platform, and it is on this car that the machines may be turned.

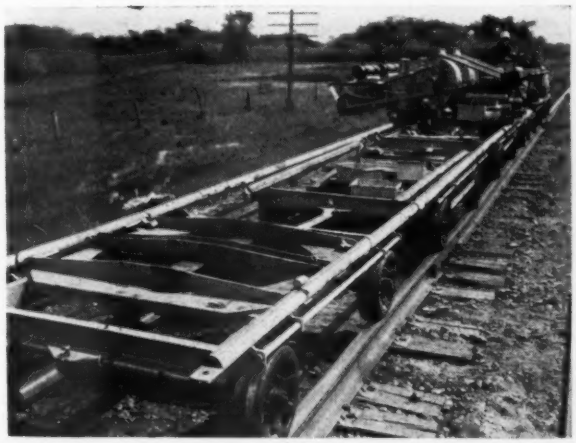
When the gang is changing work from one rail to the other, all track machines that are not easily lifted and turned by hand, except the rail crane, are run up the ramp at one end, turned on the turntable, and run down the ramp at the other end of the three-car outfit. Hence, all track machines retain their relative position in the gang.

In common with usual practice on the Milwaukee Road, this rail-laying gang was preceded by a separate 25-man turnout gang for laying all turnouts, which unloaded installed and loaded its own material. Another 25-man gang unloaded all rail and fastenings ahead of the main rail-laying operations. Behind the rail gang the same 25-man gang made a preliminary sorting of the old material and loaded it on cars.

Repair Crew Included

It might also be mentioned that, in accordance with usual practice on the Milwaukee, the Rondout gang was accompanied by two machine repairmen and three toolmen for keeping its equipment in good condition. The machine repairmen accompanied the gang, servicing all machines and, in the event of minor breakdowns, making the necessary repairs. Two toolmen worked with the gang while the third worked at the camp location.

Tie-tamping outfit, ahead of spiking machine, tamps up all ties of old joints to assure a solid support for the new rail



Machines of rail gang can be turned quickly for working on opposite rail on the turntable shown on the nearest push car

Meetings

Guy E. Martin
President
American Railway
Bridge and Building Association

A. H. Whisler
President
Roadmasters' and
Maintenance of Way Association

Annual convention of the Roadmasters' Association and the American Railway Bridge and Building Association to be held at the Conrad Hilton Hotel. Programs will include special features, joint sessions and banquet.

• The month of September is when the railway maintenance supervisor comes into his own. That is the time when supervisory officers in this category journey to Chicago to attend the annual conventions of the Roadmasters and Maintenance of Way Association and the American Railway Bridge and Building Association, which will be held this year at the Conrad Hilton Hotel (formerly the Stevens) on September 15-17. In accordance with usual practice the convention will convene in a joint session on Monday morning, September 15, after which the groups will separate to hold individual session. On Tuesday afternoon they will again come together for a joint session in which features of common interest have been arranged.

The complete programs of the

PROGRAMS

Concurrent Annual Conventions of the Roadmasters' and Maintenance of Way Association and the American Railway Bridge & Building Association

CONRAD HILTON HOTEL, CHICAGO, SEPTEMBER 15-17, 1952
(All Sessions Chicago Daylight Saving Time)

JOINT SESSIONS
Monday, September 15

•10:00 a.m.—Joint conventions called to order.
Welcome by presidents of the Roadmasters' and B. & B. Associations.
Greetings from the American Railway Engineering Association.
Greetings from the Track Supply Association.
Greetings from the Bridge & Building Supply Association.
•10:30 a.m.—Opening address by J. H. Aydelott, vice-president, Operations and Maintenance department, Association of American Railroads.
•10:45 a.m.—Joint Announcements.

ROADMASTERS' SESSIONS

11:00 a.m.—Address by President A. H. Whisler.
11:20 a.m.—Recognition of Past Presidents.
11:30 a.m.—Report of Committee on The Conservation and Classification of Unapplied Track Materials—J. W. McPherson, chairman (track supervisor, Southern, Charlottesville, Va.).
12:15 p.m.—Adjournment for lunch.

BRIDGE & BUILDING SESSIONS

11:00 a.m.—Address by President Guy E. Martin.
11:15 a.m.—Recognition of Past Presidents.
11:30 a.m.—Report of Committee on present trends in Modernization of Passenger Stations—W. F. Armstrong, chairman (assistant architectural engineer, Chicago & North Western, Chicago).
12:15 a.m.—Adjournment for lunch.

MONDAY AFTERNOON

2:00 p.m.—Report of Committee on Apparent Effects of 40-Hr. Week on Track Maintenance—G. L. Harris, chairman (division engineer, St. Louis-San Francisco, Amory, Miss.).
2:45 p.m.—Address on Patrolling Track—By Whom and How Often?—by R. G. Simmons (general roadmaster, Chicago, Milwaukee, St. Paul & Pacific, Chicago).
3:30 p.m.—Address on Track Maintenance Without Section Gangs, by E. L. Anderson (chief engineer, St. Louis-San Francisco, Springfield, Mo.).
4:15 p.m.—Adjournment.

2:00 p.m.—Report on Committee on Restoring and Prolonging Life of Masonry Structures—B. C. Phillips, chairman (master carpenter, Chicago, Burlington & Quincy, Alliance, Neb.).
2:45 p.m.—Address on How to Make Durable Concrete, by George H. Paris (railway representative, Portland Cement Association, Chicago).
3:30 a.m.—Report of Committee on Inspection and Maintenance of Water Tanks—J. H. Stinebaugh, chairman (supervisor water service, Illinois Central, Carbondale, Ill.).
4:15 p.m.—Adjournment.

at Chicago of Track and B. & B. Groups

two conventions, including the joint sessions, are presented below. The reports of the technical committees—six for the Roadmasters and eight for the Bridge and Building group—will occupy the greater part of the program of each association. Aside from the committee reports, the Roadmasters program will include three other features—an address on Patrolling Track—By Whom and How Often?—by R. G. Simmons, general roadmaster, Milwaukee Road, Chicago; another address on Track Maintenance Without Section Gangs, by E. L. Anderson, chief engineer, Frisco, Springfield, Mo., and a moving picture depicting rail-laying practices on Chesapeake & Ohio.

Aside from the committee reports for the Bridge and Building Association the separate sessions of this group will have two special features, namely, an address on How to Make Durable Concrete by George H. Paris, railway representative, Portland Cement Association, Chicago, and a moving picture in color showing tests of various fire retardant materials for the ties and guard timbers on open-deck trestles on the Santa Fe.

The joint session on Tuesday afternoon will begin with an address by Wayne A. Johnston, president, Illinois Central, Chicago, whose subject will be "The Men Who Run Our Railroads." He will be followed by the showing of a moving picture on the building of the 350-mile, Quebec, North Shore Labrador, with commentary by Morris Bradley and Jack W. Buford.

The social and entertainment aspects of the convention will be furnished largely by the annual banquet, to be held Tuesday evening, at which the members of both the associations and their families will be the guests of the Track Supply Association and the Bridge and Building Supply Association. At the close of the convention sessions both groups will visit the Museum of Science and Industry at which special exhibits have been arranged in connection with the Centennial of Engineering.

The sessions of the Roadmaster's Association will be presided over by the association's president, A. H. Whisler, assistant engineer, Pennsylvania, Philadelphia. The meetings of the Bridge and Building Association will be directed by its president, Guy E. Martin, superintendent of water service, Illinois Central, Chicago.

TUESDAY MORNING
September 16

9:30 a.m.—Report of Committee on Operation and Maintenance of Mechanical Equipment in Maintenance of Way Work—N. W. Kopp, chairman (division engineer, Illinois Central, Jackson, Tenn.).
10:15 a.m.—Showing of moving picture, High Iron Highway, depicting rail-laying practices on the Chesapeake & Ohio.
11:00 a.m.—Report of Committee on Installation and Maintenance Practices to Extend the Life of Cross and Switch Ties—E. L. Collette, chairman (division engineer, St. Louis-San Francisco, Ft. Smith, Ark.).
11:45 a.m.—Adjournment for lunch.

9:30 a.m.—Report of Committee on Developments in Power Tools and Machines—John T. Hiner, chairman (bridge & building supervisor, Southern, Greenville, S.C.).
10:15 a.m.—Report of Committee on Safety Problems of the Supervisor—G. Switzer, chairman (assistant division engineer, Western Pacific, Sacramento, Calif.).
11:00 a.m.—Report of Committee on Fire Prevention Through Regular Inspections—H. B. Lorence, chairman (fire protection engineer, Chicago River & Indiana, Hammond, Ind.).
11:45 a.m.—Adjournment for lunch.

TUESDAY AFTERNOON

*2:00 p.m.—Address on the Men Who Run Our Railroads, by Wayne A. Johnston, president, Illinois Central, Chicago.
*2:30 p.m.—Color moving pictures showing building of 350 miles of railroad in the far north—commentary by Morris Bradley and Jack W. Buford, both of the M. A. Hanna Company, Cleveland, Ohio.

TUESDAY EVENING
(Grand Ballroom—Informal)

6:30 p.m.—Joint Annual Banquet of the Roadmasters' and Bridge and Building Associations—with Supply Associations.

WEDNESDAY MORNING
September 17

9:30 a.m.—Report of Committee on Maintenance and Inspection of Turnouts—T. B. Hutcheson, chairman (assistant chief engineer, Seaboard Air Line, Norfolk, Va.).
10:15 a.m.—Report of Committee on Records Necessary for the Efficient Maintenance and Repair of Work Equipment—J. S. McCauley, chairman (assistant division engineer, Southern Pacific, Bakersfield, Calif.).
11:00 a.m.—Business Session.
Election of Officers.
11:30 a.m.—Adjournment.

9:30 a.m.—Report of Committee on Methods of Repairs to Steel Bridges and Structures—G. W. Benson, chairman (superintendent bridges, Central of Georgia, Macon, Ga.).
10:15 a.m.—Report of Committee on Maintenance of Track Scales—C. W. Laird, chairman (scales superintendent, Missouri Pacific Lines, Houston, Tex.).
11:00 a.m.—Business Session.
Election of Officers.
11:30 a.m.—Adjournment.

WEDNESDAY AFTERNOON

2:00 p.m.—Visit to Museum of Science and Industry, 57th Street in Jackson Park—Ladies cordially invited.

*Joint Sessions will be held in North Ballroom

With the precision and unison of a well-coached football line shifting to open a hole for an off-tackle thrust, Santa Fe forces roll a 220-ft., 800-ton ballast-deck truss span longitudinally to provide a straighter channel for the Neosho river in Kansas.

READY FOR THE BIG PULL, with the new piers in place and the falsework erected

Double-Track Bridge Truss Moved 50 ft. — Lengthwise

• Flood-proofing of the Santa Fe railway through Kansas and Missouri is well on its way. In pursuing that improvement program, roadbed grades are being raised and bridge openings enlarged. One of the most important of the projects completed to date involved the reconstruction of the bridge carrying the roads double-track main line over the Neosho river, near Neosho Rapids, Kan., and included the major task of shifting an 800-ton truss span lengthwise about 50 ft.

After the record flood in July 1951, it was indicated that the east abutment of this bridge, built in 1887 and extended for double track in 1905, needed to be renewed and the bridge enlarged. As the main channel of the Neosho river had moved to the east, it was decided to build new piers for the truss span east of the present abutments and then roll the 220-ft. double-track truss onto the new piers. At the same time, the bridge was also to be extended 200 ft. on the east end and 50 ft. on the west end by installing 50 ft. beam spans.

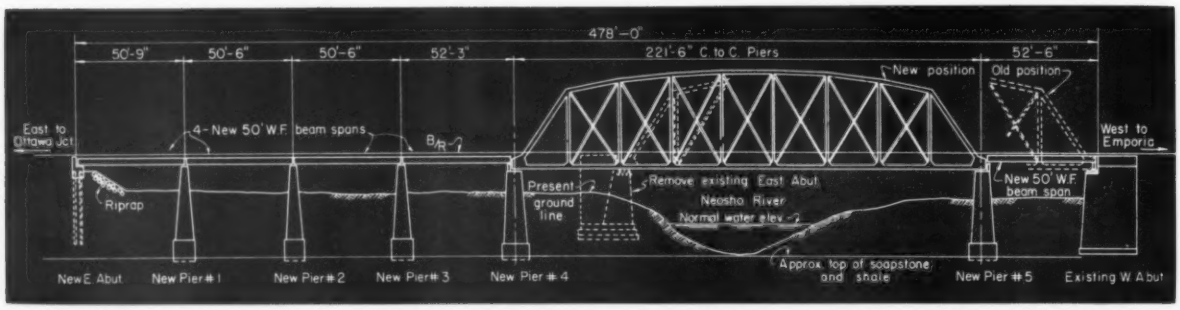
Falsework Constructed

To accomplish this task as expeditiously as possible, the track on the approach fill east of the truss was supported for 200 ft. on falsework employing 50 ft., wide flange beams resting on double pile bents so located that the permanent concrete piers could be constructed between them. This procedure facilitated the pouring of the piers within steel cofferdams openly excavated. The method also permitted the beam spans to be made a part of the permanent structure by shifting them into position on the new piers, thus saving steel.

One detail in the construction of the temporary approach spans at the east end was of particular importance in the later shifting of the truss. The last 50 ft. WF beam span ended midway between the east abutment and the new pier for the truss span and was supported there by grillages resting on the falsework built to carry the east end of the truss during the shifting operation. To close the opening between this beam and the old pier a 25 ft. beam span was placed for each track. With this arrangement, the last 50 ft. span and the shorter span could be removed easily, the truss pulled into place and the 25 ft. span again used to close the gap between the truss in its new location and the first double pile bent of the temporary approach spans.

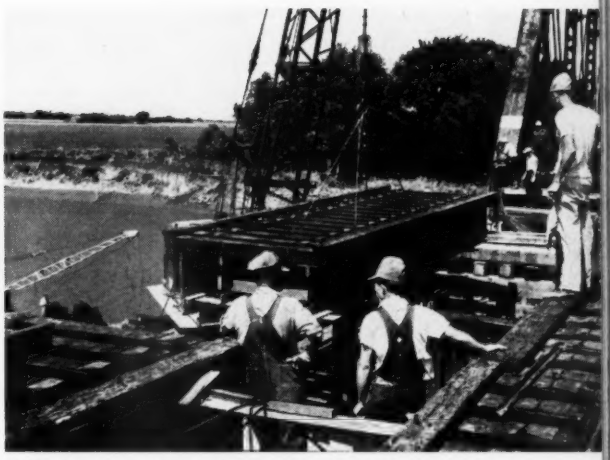
Preparations for Moving

Early in the planning of this project, it was decided that the success of the truss-shifting operation would depend on two major factors: (1) The ability to provide, for both ends of the truss, sturdy supports which would not settle during the movement; and (2) an



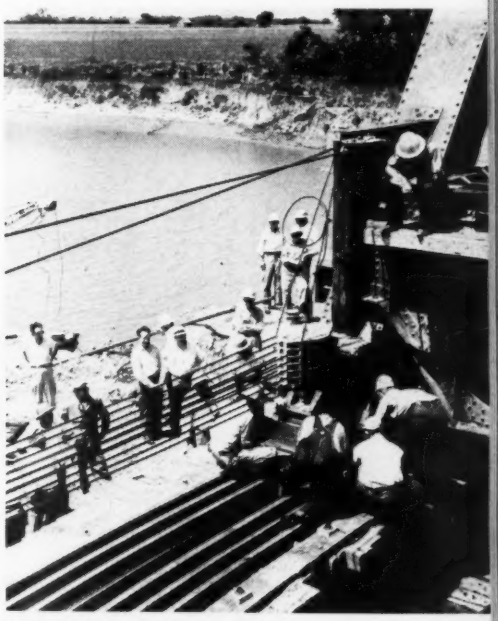
NEW BRIDGE, with four approach spans added east and one west of shifted truss, provided straighter, wider river channel

TRUSS WAITS PATIENTLY while the spans to the east are removed



THIS ONE was later fitted east of shifted truss

LOCOMOTIVE CRANE provided pulling power to move bridge by means of an elaborate block-and-tackle system sketched on next page. Note pipe for pumping concrete



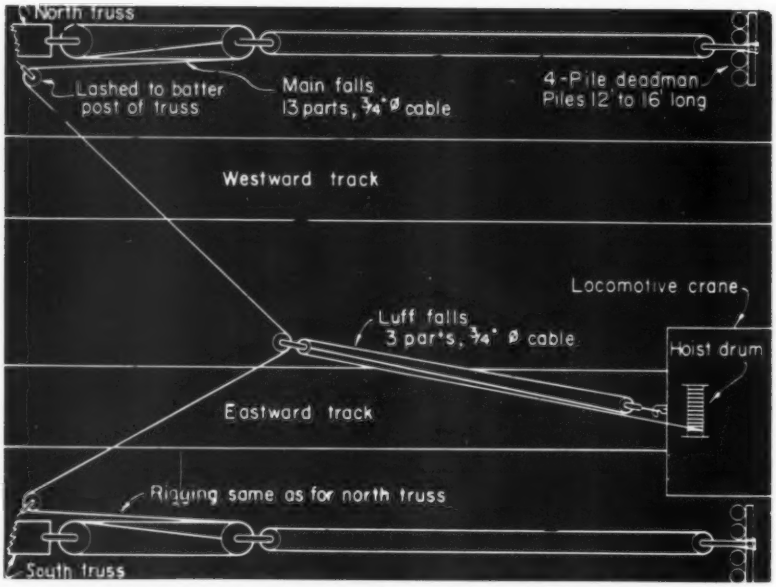
STEEL RAILS, on sturdy falsework provided ideal supports on which . . .

adequate method of pulling the span across these supports smoothly from start to finish.

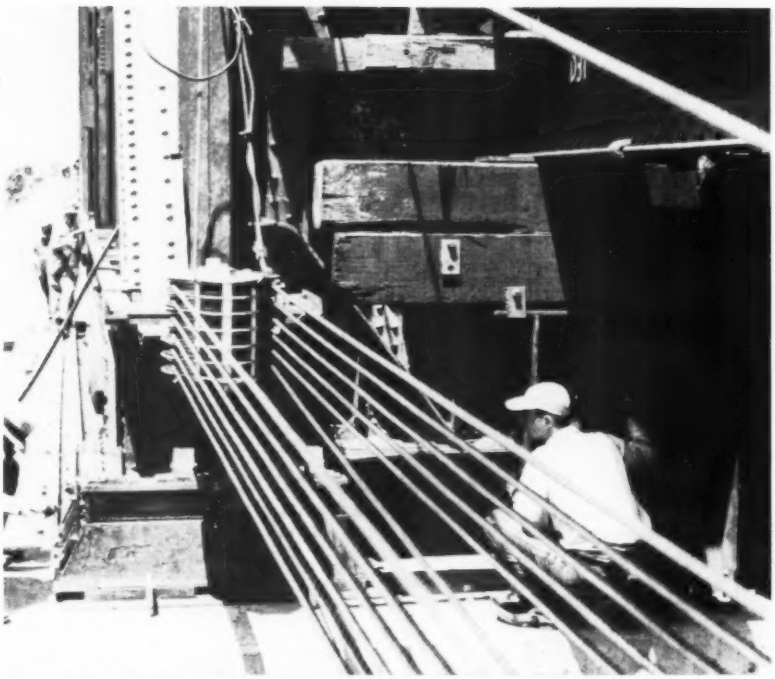
The first was obtained, basically, by four systems of longitudinal falsework beams supported at 10 ft. intervals on pile bents driven to hard shale. Each system of beams was designed to carry, without settlement, one of the bearing shoes and its 400,000-lb. load. Across these beams, short, sawed crossties were laid side by side. On the ties, seven steel rails were placed workwise and guard timbers were bolted on each side of the group to keep the rails securely in place when the truss shoes moved across them on 1 in. rollers.

The second requirement on which success depended was accomplished by a block-and-tackle system arranged in the manner shown in an accompanying schematic diagram. It was designed with a high factor of safety and load reduction, primarily to secure smooth movement. Essentially, for each truss, it consisted of two sets of tackle – the main falls and deadman falls – alongside the bridge, and a single-sheave block lashed to the batter post. To equalize the pull on the trusses, each of the main falls was connected to a sheave block which in turn was linked to a luff tackle located between the equalizer and a locomotive crane

. . . EACH BEARING SHOE could move forward smoothly on one-inch rollers



BLOCK-and-TACKLE SYSTEM, rigged in this manner moved truss span smoothly



ALMOST HOME—Bearing shoe reaches new pier and 43-min. trip is nearly over

JOURNEY'S END—Truss span has "landed" and closure spans will soon fill gap

positioned on the eastward track.

Each set of main falls, consisting of two 6-sheave blocks rigged with ¾-in. cable, was linked to the stationary deadman falls 210 ft. long fastened to a 4-pile deadman driven beside the bridge 230 ft. east of the new truss pier. One end of the luff tackle was attached to the drawbar of the locomotive crane and the pulling cable wound onto its hoist drum.

The truss was leveled up a week or two before it was to be moved so that the loads at each bearing would be as computed and the shoes would remain at the same elevation throughout the movement, thereby preventing any twist in the truss span. Preparatory to the actual moving of the truss, a 1-in. steel plate was placed under each shoe and secured by clips welded to it. The leading edge of each of these plates was turned up like a sled runner to facilitate the placing of the 1-in. by 4 ft. rollers under it.

Moved in 43 Minutes

When all these preparations had been completed, the 25 ft. spans for each track, with ties in place, and the 50 ft. beam spans straddling the new pier were removed and the locomotive crane started to pull the bridge forward. The moving tackle, functioning as intended, overcame the high starting frictional resistance with such ease that the initial movement of the bridge was barely noticeable. The supporting falsework also remained rigid without deflection, and the truss span continued to move smoothly, finally coming to rest on its new piers 43 min. after starting.

After this critical phase of the work was done, all that remained was to place the 25 ft. spans for each track east of the truss and slip 50 ft. closure spans into the space vacated by the movement of the truss on the west side of the river. Subsequently, the 50 ft. falsework spans at the east end were shifted forward off of the pile bents onto the new piers, completing the new approach at this end of the bridge.

The reconstruction of the Neosho River bridge was designed and planned under the general direction of T. A. Blair, chief engineer (system), and under the direct supervision of F. D. Kinnie, chief engineer (Eastern lines) and R. A. Van Ness, bridge engineer. All work was carried out under contract, with the Kansas City Bridge Company as general contractor.

R. W. Torbert

R. R. Clegg

Greetings from the Supply Associations

Supply groups reaffirm desire to cooperate in solving maintenance problems

TO MEMBERS OF THE ROADMASTERS' ASSOCIATION AND THE BRIDGE & BUILDING ASSOCIATION:

We are happy to have this opportunity to extend greetings to the Roadmasters' and Bridge & Building Associations on behalf of the member companies of the Track Supply Association and the Bridge & Building Supply Association.

We hope sincerely that your conventions this year will be successful in every way, and we pledge our full cooperation to that end. Since there will be no formal exhibition of manufacturers' products this year, our members will be afforded additional time and opportunity to attend your meetings and to learn how they may cooperate with you more fully to our mutual advantage. Furthermore, in order to assure maximum attendance at your meetings, our member companies have agreed to refrain from presenting displays or exhibits of any kind in their hotel suites. Finally, to help make your program complete and to provide what we hope will be a welcome diversion from the close attention we know you will give to the scheduled reports and discussions during your business sessions, our associations are tendering a banquet on Tuesday evening, September 16, at which the members of your two associations, and their families, are invited to be our guests.

The mutual desire for doing everything possible to assure the continued success and financial integrity of the railroad industry provides the basis for closely allied common interests on the part of our two supply associations on the one hand, and your two railroad groups on the other. That is why our member companies are constantly endeavoring to improve their products by increasing their efficiency, effectiveness, durability, or attractiveness, as the case may be, depending on the nature of the product. The events of the year, resulting in less steel and labor with which to complete the work you had planned, place an extra responsibility on all of us. Our member companies, for example, must redouble their efforts to deliver the maximum of materials and services.

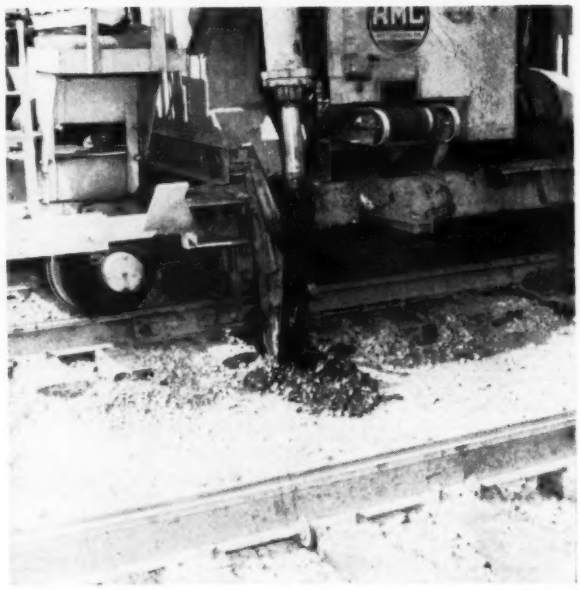
It is the earnest desire of our member companies to be of the greatest possible service to railroad engineering and maintenance officers and supervisors in helping them to solve problems involving the use of materials, tools, or equipment. We are confident that your efforts in this direction will be stimulated by the exchange of ideas which will take place at the meetings of your two associations.

R. W. TORBERT
President
Track Supply Association

R. R. CLEGG
President
Bridge & Building
Supply Association

HYDRAULIC RAMS on each side of the cribbing machine remain poised near the ends of the ties while a bucket conveyor excavates the ballast in the crib between the running rails

STEP TWO—When the crib has been excavated between the rails, the rams force the outer cribs under the rails so the ballast can be picked up by relowering the bucket conveyor



Machine Excavates Cribs, *Aids Drainage at Station*

Working between curbs or between curb and intertrack fence, an on-track cribbing machine goes a long way on the North Western toward solving one of the most troublesome problems encountered by track maintenance forces.

• For several years, the Chicago & North Western, through the use of the McWilliams cribbing machine, has been effecting substantial economies in the cost of replacing the ballast in tie cribs through passenger platforms and station grounds. The maintenance of track in such areas has long been the bane of the track-maintenance officers on this as well as other roads. Under the critical scrutiny of passengers who know little about such things, tracks through station platforms seldom appear to receive enough maintenance. Natural drainage is often blocked by platform curbs, and sub-surface drainage systems are difficult to maintain. Ballast consequently fouls quickly and mud often appears after heavy rains.

Heretofore, the North Western, in common with other roads, has had to spend an inordinately large amount for the adequate maintenance of its tracks through station grounds. Like other roads, it has periodically cleaned the ballast in the tie cribs by hand or manually excavated it and supplied new ballast in replacement.

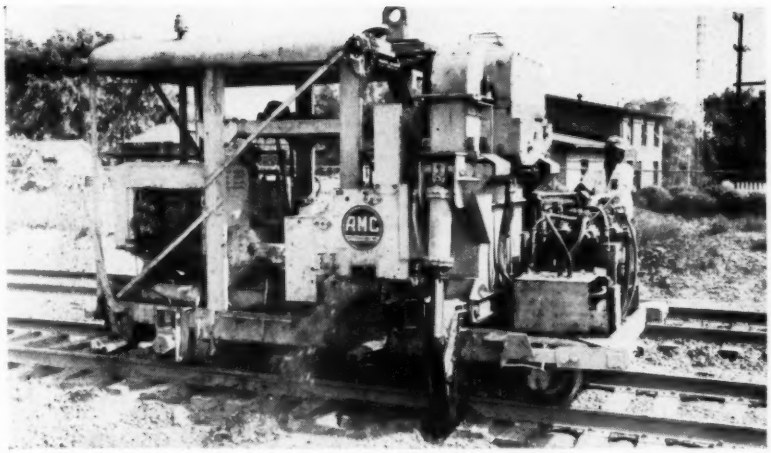
Hand Cribbing Expensive

That this has been an expensive maintenance chore in the past is shown by a test that was made a few years ago in which an extra gang was timed while excavating fouled gravel ballast from individual tie cribs. In this test it was found that one man could remove the ballast from an average of two cribs per hour. Therefore, maintenance officers on the North Western generally estimate that it takes ½ man-hour to clean a badly fouled tie crib within station grounds. At present labor rates that means approximately 75¢ per cleaned crib.

With such a heritage of high costs in cleaning cribs through station areas, it was relatively easy to justify the purchase, in 1949, of one of the first McWilliams' crib cleaners to be made. It was originally planned to use this unit for the specific purpose of "improving track drainage by cleaning crib ballast wherever it might have become fouled." It was soon found, however, that the types of ballast that were most in need of attention were unworthy of being cleaned and returned to the track. As a consequence, little cleaning, as such, has been done. Instead, the vibrating screens have been removed so that the crib ballast could be picked up by the machine and wasted. In some instances the ballast has been replaced in kind, while in others gravel and limestone have each been replaced by slag.

Few Men Needed

In doing this work, the cribbing machine (see accompanying description) is in charge of one oper-



THE McWILLIAMS CRIB CLEANER . . .

. . . Manufactured by the Railway Maintenance Corporation, Pittsburgh, Pa., is an on-track, self-propelled unit which can be used either for cleaning the ballast it excavates from the cribs, returning it to the track, or for excavating the cribs only, wasting the dirty ballast alongside the track.

In the operation of this machine, ballast in the tie cribs between the rails is first picked up by an endless conveyor of the digging-bucket type. When used for cleaning, this conveyor delivers the ballast to vibrating screens which shake out the dirt onto a transverse conveyor which delivers it to the side of the roadbed. Cleaned ballast is returned to track.

When the bucket conveyor has excavated the crib to the depth desired, the buckets are raised and hydraulic rams force the crib ballast from the ends of the ties under the rail into the excavated crib. As this is done the digging conveyor is again lowered and this ballast is picked up and cleaned.

To operate the machine as a crib excavator only, it is necessary merely to remove the vibrating screens, a change that can be made in a few moments. When this is done all the material excavated from the cribs is deposited directly on the dirt conveyor which carries it to the side of the roadbed.

This dirt conveyor, operating at right angles to the track, is reversible, thus permitting delivery of the dirt to either side of the track, normally 7 ft. from the center line. Whenever it is desired to deliver the dirt across an adjacent track or at a great distance from the machine a 16-ft. swing conveyor is provided which can be folded in the clear alongside the machine when not in use.

The dimensions of the machine are such that it can be operated without fouling an adjacent track. It is powered by a 75-hp. diesel or gasoline engine direct connected to a hydraulic pump. All operations of the machine, including propulsion, are hydraulically operated by the pump except the mechanical drive of the digging excavator-conveyor.

The unit can travel "light" at speeds ranging up to 18 m.p.h. and is equipped with air, hydraulic and hand brakes. All operations are controlled from one location and only one operator is required.

Platforms

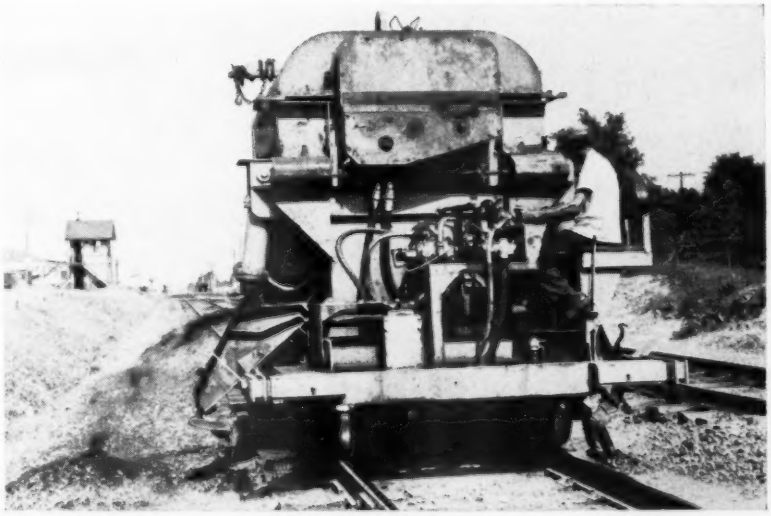
ator and is piloted by an engineman and conductor. A trackman removes rail anchors immediately ahead of the unit so the hydraulic rams can push under the base of rail. At the first opportunity, generally when traffic forces the unit to "clear" the tracks, this same trackman replaces the anchors. He also hand excavates the few cribs that are too narrow to permit either the rams or digging buckets to enter.

When working along station platforms, any of several methods are used to dispose of the excavated material. When there are no intertrack fences, and if traffic permits, the waste material is loaded on pushcars on the other track. Normally, however, it is merely dumped on the station platform from which it is loaded into automobile dump trucks by a rubber-tired front-end loader, or by other means. Throughout the station grounds beyond platform limits, the dirty ballast is deposited on the ballast shoulder or embankment and later loaded by crane.

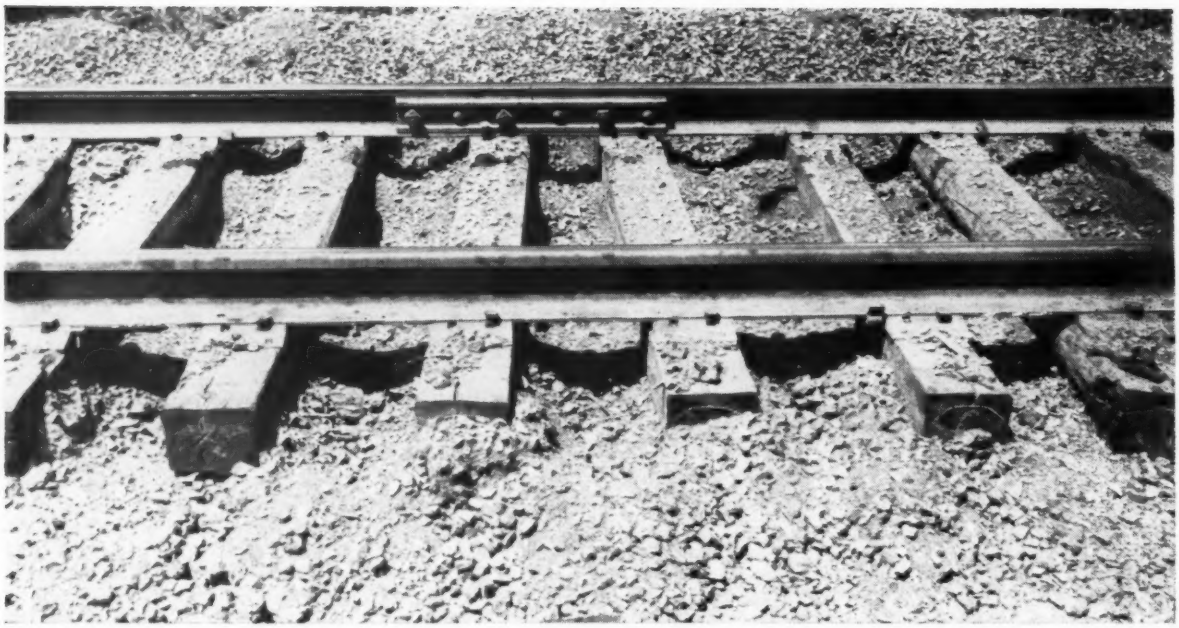
The empty cribs are refilled as soon as economically possible after they have been cleaned out. Generally, work-train schedules are arranged so that this can be done as soon as possible after enough cribs have been removed to justify the use of a work train. In the meantime, a slow order is placed on the track to minimize the possibility of danger from its being kicked out of line by traffic or other causes until surfacing operations are completed.

In general the cribbing of tracks through station grounds is planned in conjunction with extra-gang surfacing programs. Sometimes, however, particularly troublesome spots have been made individual projects. In all cases, such work has improved riding conditions, reduced the attention required by section forces and enhanced the good-will of the public.

To date the mechanical cribbing has been done where the need has



DIRTY BALLAST is dumped from the digging buckets onto a transverse conveyor which wastes it along the track shoulder. Conveyor can be swung to either side of machine



RAIL ANCHORS are removed so the hydraulic rams can push the ballast under the rails. They are reapplied immediately

ECONOMY is possible even when much of the time must be spent clearing trains

BEFORE CRIBBING, tracks through station platforms require more maintenance

been greatest. This has generally been in heavy-traffic territory where possible track usage by the machine has been the least—often less than three hours per day. Consequently, when conditions warrant the use of the cribber in open track territory as an adjunct to reballasting programs, even greater savings are anticipated.

Performance Record

Needless to say, the performance and savings have varied between territories, generally in direct ratio to the amount of track occupancy permitted by traffic conditions. Typical of the production generally secured with the cribbing unit is that obtained between May 22 and August 2, 1950. During that time 3.91 miles of track or 12,730 cribs were cleaned at a rate of 76.4 cribs per hour of operation. To do this work cost 18.3 cents per crib. Allowing for increased costs since 1950, it can be seen that the use of the cribber is saving an average of more than 50 cents per crib. Because of heavy traffic during that time the machine could only work 166 hours in 45 days, or at an average of 3 hr. 42 min. per day.

The operation of the cribbing machine is under the general direction of L. R. Lamport, chief engineer of maintenance, and under the direct supervision of the division engineers and roadmasters in whose territories the unit works.

THE SPECIAL long-nap, lambs'-wool roller is dipped into the material container (a 5-gal. size is desirable), pulled up on a flat surface to remove running, surplus material, then rolled on the surface to be coated. The critical corners of the mesh and even the barbed wire are completely covered.

YEARS of additional service life are added to this wire-mesh fence by this 5-man gang. The head man removes all rust scale and loose particles. The next two men apply the coating material to the mesh with the special rollers, while the last two men brush-coat the material on the supporting framework.

Long-Nap, Lambs'-Wool Roller

Cuts Cost of Coating Wire Fences

This how-to-do-it article describes how to effect considerable economies and save time when coating wire-mesh fences, signal rods, pipes and equipment.

• Applying coatings to wire fences, pipes and signal equipment has long been among the more difficult problems of the railroad maintenance man, not only because of the time-consuming character of the manual operations involved but also because of the waste of material. With iron-mesh fencing, for instance, normally, more than half of the coating material ends up on the ground. In searching for an economical method for applying its coating product, the Rust-Oleum Corporation found that the use of a special long-nap, lambs'-wool roller proved to be most satisfactory for applying Rust-Oleum to these difficult-to-paint surfaces. When using this coating applicator, it was found that approximately 99 per cent of the coating material was applied to the surfaces to be protected and, in the case of wire-mesh fencing, at least 70 per cent of the other side was coated at the same time due to the rolling action. The critical corners of the diamond mesh were also completely coated. It was also found that this method of application was relatively free from splashing, drippings or spray, and that the work could be done in half of the time required to coat the surfaces by the ordinary brush or spray methods.

Five Men Paint Long Stretches

Where long stretches of fencing are to be coated, as in terminals, a five-man paint gang proved economical. The first man of this gang worked ahead removing rust scale and loose particles with a sharp scraper and wirebrush. Three to six feet behind him, a second man followed with the special roller and liberally applied the material to the wire sections and to the three-strand barbed wire at the top of the fence. A third man followed several minutes behind on the opposite side of the fence where, with a similar roller, he caught the surplus material hanging in "tears" at many places on the fencing and applied it to the surface remaining to be coated on his side. The last two men, working on opposite sides of the fense, brush-coated the material on the supporting framework and upper arms of the fence.

It was stated that this roller method resulted in substantial savings in materials; five sections, 5 ft. high and 10 ft. long, were coated on both sides with approximately one gallon of Rust-Oleum per coat. Also, this work was done in half the time needed to coat surfaces by ordinary methods.

THE COMBINATION snow fighting unit is propelled by a steam locomotive which also furnishes steam for melting the snow

New type snow-fighting unit, operated late last winter under a variety of conditions at Minneapolis, will either cast the snow to one side or into a melting tank. The general features of the machine, and the results of its use on the Great Northern, are discussed in this article.

G N Tries Out Combination Snow Plow

WHEN used only as a snow plow the machine reportedly can cast snow a distance of 75 to 100 feet in either direction

• A preview of what's in store for the future in the way of snow-fighting operations in the Twin Cities terminals of the Great Northern was afforded by initial experience early in 1952 with a combination snow plow and melter which was delivered to the road in February. During two stormy periods, one in that month and another in March, the unit was used at various locations in Minneapolis. Although this work was largely in the nature of "trial runs," with frequent stops being made for experimentation and adjustment, and with no effort being made to establish or keep records, the performance of the machine from the standpoint of efficiency and effectiveness was reported to be satisfactory.

General Features of the Unit

Known as the Bros Sno-Melter this dual-purpose machine was developed and is being manufactured by the Wm. Bros Boiler & Manufacturing Co., Minneapolis. A detailed description of the unit was presented in the July 1951 issue of *Railway Engineering and Maintenance*. It consists essentially of a large steel tank mounted on a 70-ton flat car which also incorporates, at the forward end, rotary rakes, rotors, and chutes for picking up and discharging snow and ice in any direction or into the snow melting tank. Also mounted at the forward end of the car over the rotary power unit and pump mechanism is the operator's cab. When in operation, the unit is pushed by a steam locomotive which also furnishes steam for melting snow.

The rotary snow plow at the forward end of the machine is similar in design to the Bros Sno-Flvr plow that is used widely on highway equipment. Gathering wings are provided to allow a coverage of 14 ft. when they are in the extended position; when adjusted inward the wings span a width of 11 ft., or they can be folded back behind the moldboard width of 9 ft.

LEFT—Machine shown here "eating" its way down a yard track on the GN at Minneapolis. RIGHT—Same track immediately afterward

w and Melter

Near the forward end of the flat car is a hydraulic power-operated scarifier which plows and loosens packed snow and ice to a depth of 3 in. below the tops of the rails. When the combination unit is used merely as a snow plow it is said to be capable of casting snow approximately 75 to 100 ft. in either direction.

MELTED SNOW collected within the tank is quickly "dumped" through 16-in. outlets

How the Snow Is Melted

The snow-melting function of the machine takes place in an enclosed section of the main tank which has ventura openings at its top front end to permit the entry of snow from the rotary plow. The top half of this chamber contains multiple water spray units to form a dense shower of heated water into which the snow enters in disintegrated form. The melting tank has a capacity of 19,000 gal. When this amount of water has accumulated from melting snow the unit is moved to a bridge or other suitable location and the water discharged through 16-in. dumping gates in the lower sides of the tank. There are four such outlets, two on each side. The gates in the outlets are operated manually by levers on top of the tank. When dumping, a total of 3300 gal. of water is retained in a reservoir in the tank, which is circulated to the sprays during the next melting cycle.

In the operation of the combination unit on the Great Northern at Minneapolis it was used in both ways, that is, at some locations the snow was cast to the side, while in others it was channeled into the tank for melting. At one time or another during February and March it was operated in the Minneapolis station and in the Cedar Lake and Lyndale yards. At the station and in Cedar Lake yard the snow was as deep as 14 in. over the rails, while in Lyndale yard there was as much as 6 in. of solid ice and 6 in. of snow. Thus the conditions encountered were of such a nature as to test both the versatility and the effectiveness of the machine.

THE NEW BRIDGE, replacing an obsolete structure across the main track of the Grand Trunk Western at Valparaiso, Ind. Except for bracing, all wood used in the bridge was cut from timbers, framed and incised, then treated with pentachlorophenol

Builds Penta-Treated Overhead Bridge

When the Grand Trunk Western had to replace an overhead highway bridge at Valparaiso, Ind., it constructed a seven-span framed-bent structure of timbers treated with pentrachlorophenol and applied a deck made of I-Beam-Lok embedded in concrete. The completed structure is expected to give a service life of from 30 to 40 years, and has already brought several compliments to the railroad from various local citizens concerning its attractive appearance.

• Recently the overhead highway timber bridge carrying Campbell street over the single main track of the Grand Trunk Western at Valparaiso, Ind., became deteriorated to the extent that it was no longer fully adequate and safe for highway traffic. After consultation between A. N. Laird, chief engineer of the GTW, and representatives of the City of Valparaiso and of Porter county, which corporate bodies also participated in the cost of renewing this structure under Indiana statutes, it was decided to renew the bridge with a timber substructure, treated with pentachlorophenol, and having an I-Beam-Lok deck embedded in concrete with an asphalt-mat wearing surface. Studies showed that such a structure would have a service life ranging from 30 to 40 years and cost would be low.

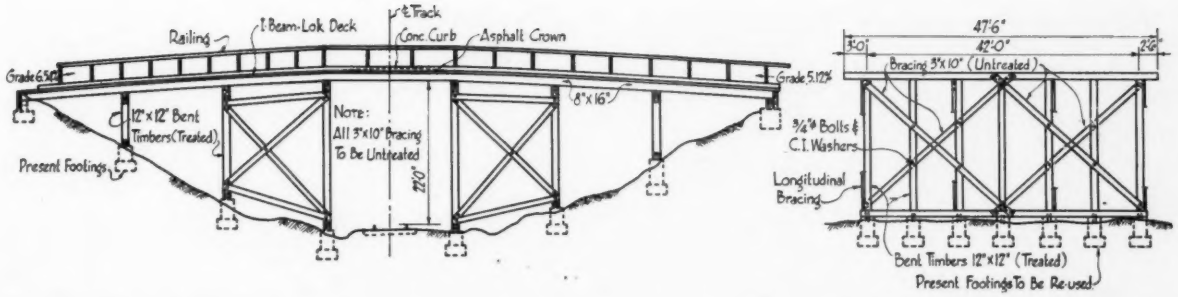
Campbell street extends in a north-south direction and crosses the track at an angle of approximately 74 deg. 24 min., thus necessitating skewed bents. As measured at right angles to the track, the center span of the reconstructed bridge is 19 ft. long and is flanked on the south side by three 15-ft. spans, and on the north by two 15-ft. spans and one span 17 ft. long.

Skew Presents Problem

Because of the skew layout and the fact that the approach spans ascend in the direction of the track span on grades of approximately five per cent from the north and six per cent from the south, somewhat of a problem was presented in the design to make the deck horizontal in the transverse direction. This was done by using a long shim block on top of the cap of each bent. The thickness of these blocks was determined by the computed elevation of the bottom of each stringer. For connecting the approach grades on each side of the track span, it was necessary to shape the ends of some stringers, prior to treatment, where the grades broke on the track span, and to provide a vertical curve by varying the thickness of the asphalt mat on the track span.

Bracing Not Treated

With the exception of the bracing, which was untreated, all timbers, totaling about 57,000 bd. ft., were cut, framed and incised at the plant of the Joslyn Manufacturing & Supply Co. at nearby Franklin Park, Ill., after which they were pressure-treated with pentachlorophenol to a retention of 8 lb. per cu. ft. The posts, caps and sills on the structure were cut from 12-in.



LONGITUDINAL SECTION of the bridge and elevation of typical bent. The old concrete footings and pedestals were reused

by 12-in. Douglas fir timbers and the stringers from 8-in. by 16-in. timbers.

The existing concrete footings and pedestals were reused. These consisted of seven separate units for each of the intermediate bents and large monolithic footings for each of the end bents. The timber sills were fastened to the concrete pedestals by anchor bolts.

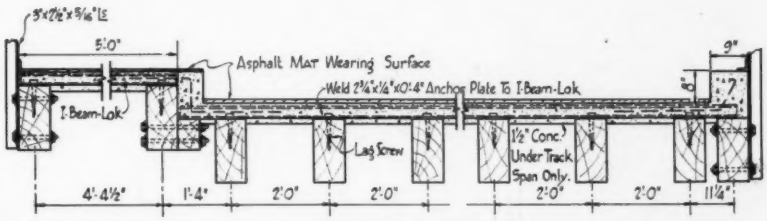
The long shim blocks were drift-bolted into the caps, and the stringers, at 2-ft. centers, were anchored by drift pins that extend down through the shim blocks into the caps. In every fourth line of stringers ½-in. steel plates were bolted to the sides of abutting stringers over the caps.

The deck was constructed of 3-in. I-Beam-Lok, fastened to the stringers by lag screws and embedded in concrete. An asphalt mat, ranging from 1 in. to 2½ in. in thickness, was laid over the concrete to form a wearing surface and to prevent the penetration of moisture. Reinforced concrete curbs were constructed at each side of the roadway, and a sidewalk, 5 ft. wide and of the same construction as the roadway deck, was built along the east side of the bridge. The old handrails, of steel angle construction, were reused.

Provides 22-Ft. Clearance

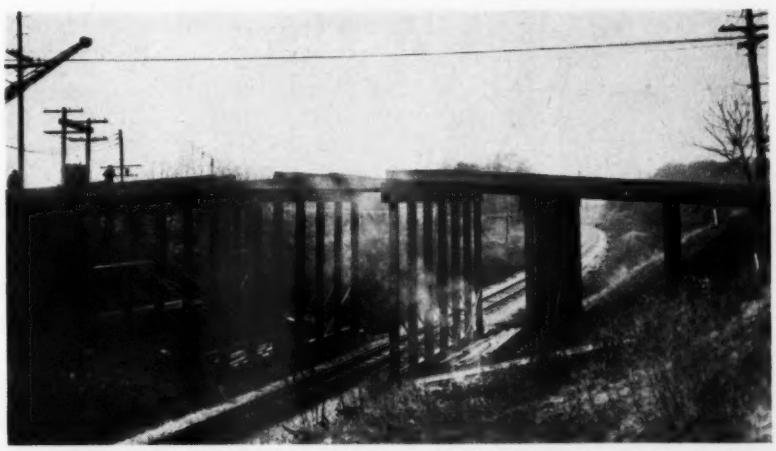
The main span provides a clearance of 22 ft. from the underside of the stringers to the high rail of the curved track. A protective coating of concrete, 1½ in. thick, was applied to the underside of the I-Beam-Lok on the track span, and steel blast plates, 4 ft. wide, were fastened to the undersides of the stringers along the center line of the track.

The bridge was designed and constructed under the general direction of Mr. Laird. The construction work was done under contract by Shamrock Engineering, Gary, Ind.



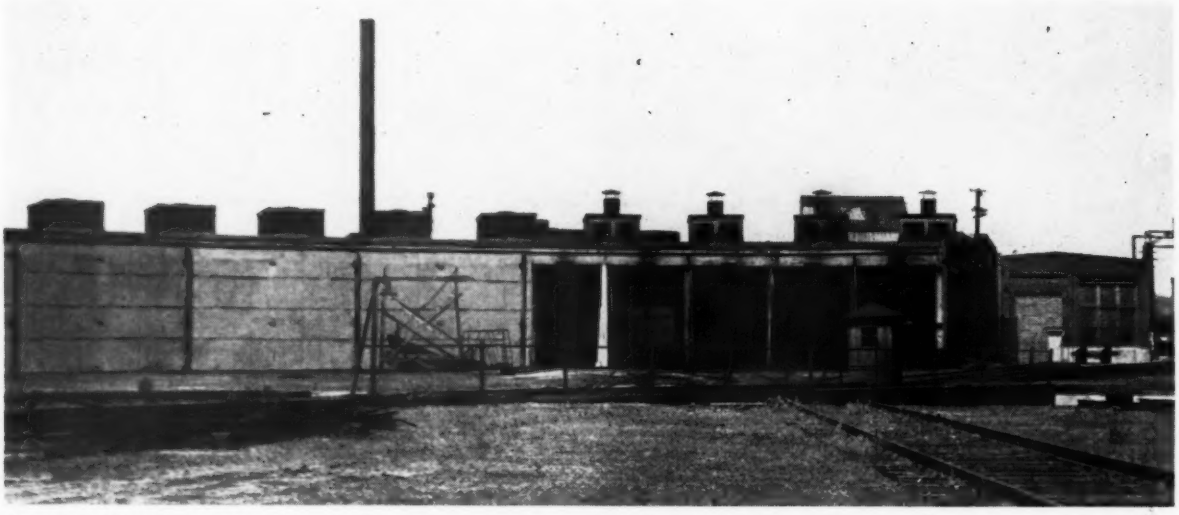
SECTION showing the details of the deck construction. The I-Beam-Lok was first fastened to the stringers by means of lag screws and was then encased in concrete.

AN ASPHALT MAT, 1 to 2½ in. thick, provides wearing surface for vehicular deck



THE SKEWED BENTS and approach grades required some shaping of the stringers in the main span to maintain a horizontal traverse plane across the roadway

New Career for Old Enginehouse...



IN ALL EXCEPT ONE of 16 stalls set aside for record storage, engine door openings were enclosed with lumber. One door was left open to permit a car to be spotted in the building for loading records. The remaining 4 stalls of this 20-stall structure were retained for handling steam locomotives pending final completion of the Southern's dieselization program

Becomes Storehouse for Company Records

ILLUMINATION within the storehouse is aided considerably by the large areas of sash located in the outer circle wall

When a need developed on the Southern for more space to store company records the unused portion of a steam enginehouse, rendered largely obsolete by dieselization, was found to be well suited to the purpose. The alterations needed to adapt the building to its new function were relatively minor.

• Superficially there may not appear to be much relationship between dieselization of motive power on the one hand and a need for more storage space for company records on the other but the Southern found that there is at least an indirect connection between the two. What happened was that the company's enginehouse at Alexandria, Va., which was largely in disuse due to the steady replacement of steam engines by diesels, proved to offer just the kind of space that was required for the efficient storage of various company records.

A former machine shop in Alexandria was heretofore used to store the records for which there was no immediate need, but which the railway is required by law to retain permanently or for a specified number of years. Space limitations in the machine shop and other conditions forced the railway to seek more spacious storage quarters. The records involved include the bound files and other infrequently consulted papers of various departments of the railway, which are located in nearby Washington.

The enginehouse at Alexandria is a 20-stall structure with concrete floors and pits, brick walls and concrete

A TOTAL of 36 rows of shelving, each 75 ft. long, was installed. Twenty-nine are of painted wood, the remainder of steel

THE SHELVING is of sufficient capacity to accommodate all existing records, and includes additional space for expansion

columns and beams supporting a concrete roof. It was decided to set aside 16 stalls of the structure for the storage of records and that the 4 remaining stalls were to remain undisturbed so that they could be used as needed to handle steam power.

To accomplish the conversion from fireproof enginehouse to fireproof record storage, all engine pits in the 16-stall section were filled in to floor level. All but one of the doors on the turntable side in this section were completely enclosed with lumber, and the rails leading to the turntable pit were removed. A floor-to-ceiling-firewall of cement blocks was constructed to separate the four stalls at one end from the storage warehouse. In the stall nearest the portion of the enginehouse still in operation the tracks were left in place so that a box car could be rolled into the new record storehouse from the turntable and there loaded with files for permanent storage at the Southern's "dead records" storehouse in Macon, Ga. The only other major structural change required in connection with the conversion was the removal of the smoke-jacks over the stalls and the sealing of the hole over each stall.

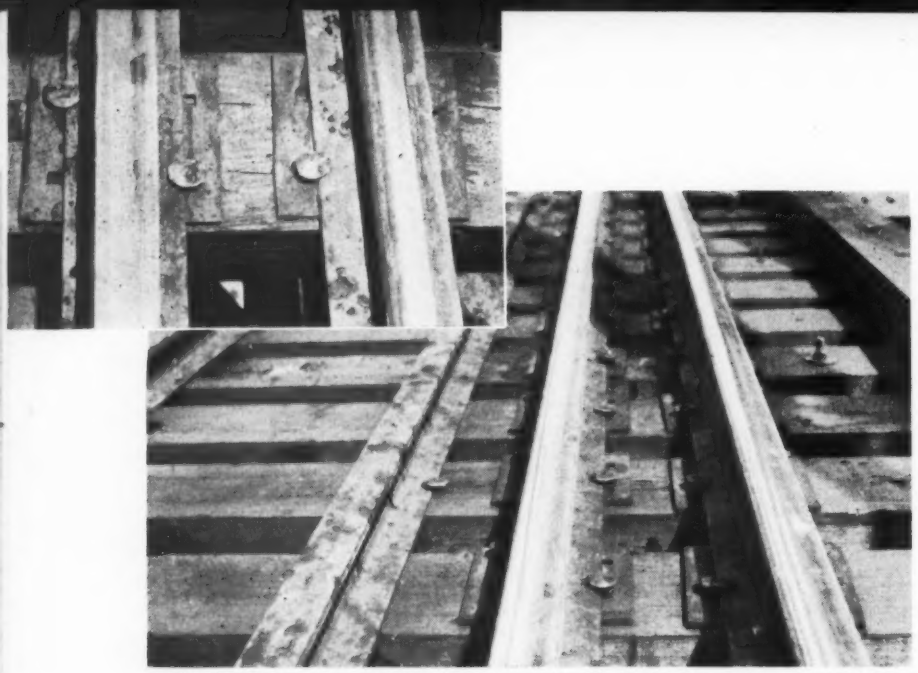
A total of 36 rows of shelving, each 75 ft. long, were installed. Of these, 29 are of wood, painted with a white fire-resistant paint, and the balance are of steel construction. Rising to a maximum height of 12 ft., each row of shelves is anchored with the adjoining one at the top to prevent tilting.

Because of the crescent shape of the structure, the width of the aisles between the shelves varies from about 3½ ft. at the end near the inside circle wall to approximately 7 ft. at the other end. The generous amount of daylight illumination afforded by the large glazed areas in the outer circle wall and in one end of the building was supplemented by incandescent fixtures

THE SMOKEJACKS were removed from the roof and holes sealed

placed along the aisles as needed. Hand fire extinguishers are located at every fourth row of shelves.

Each of the departments which turns its records over to the storehouse has been allotted space for existing records plus a few extra shelves to allow for expansion. Records which must be kept for only a specified time will be destroyed at the end of the period to make room for others, while those which must be kept permanently will remain at the storehouse as long as space permits and then be sent to Macon for storage.



DECK OF BRIDGE over the EJ&E after the work of installing the rubber pads had been completed. Insert shows close-up view of two adjacent pads on this bridge.

Replaces Tie Plates With Rubber Pads on Gauntlet-Track Bridges

Work is done on two truss bridges on the Chicago, South Shore & South Bend in connection with the out-of-face renewal of the bridge ties. Purpose is to preclude plate cutting of the ties and minimize shorting of the signal circuits.

WORK WAS DONE at night on both bridges to minimize interference with traffic

● By replacing the steel tie plates under the rails across two gauntlet-track bridges with rubber pads, the Chicago, South Shore & South Bend expects to accomplish a dual purpose. One objective is to prevent the cutting of the bridge timber by the steel tie plates, and the other is to minimize the shorting of the track circuits, which was formerly a fairly common occurrence on both bridges because of the relatively narrow gap between the tie-plates of adjacent rails. On these bridges the gaps betwen the tie plates were less than three inches, so that the signal circuits could easily be shunted by a small piece of metal touching two adjacent tie plates on the same tie.

The two bridges involved in this work are located about 2¼ miles apart near Gary, Ind. One of them, consisting of a single-span through-truss bridge 115 ft. long, carries the double-track main line of the South Shore across a double-track line of the Elgin, Joliet & Eastern. The other bridge, also a through-truss structure, consists of two 175-ft. spans. It carries the same line across tracks of the Pennsylvania and the Wabash.

In connection with the work of applying the rubber pads on both bridges, the bridge ties, which had become badly plate cut, were renewed out-of-face. The pads that were installed in place of the tie plates are of natural rubber and are 7 in. by 8 in. in size and ⅝ in. thick. They were furnished by Railroad Rubber Products, Inc., and have this company's Anchor Seal finish on both the top and bottom surfaces. This is a "cloth" type finish which is designed to seal out moisture and grit and to inhibit movement of the rail relative to the pads and of the pads relative to the ties. Each pad was pre-punched with four square line spike holes which were made slightly undersize to assure a snug fit of these spikes.

Work Done at Night

Because the South Shore is a high-density traffic line, it was necessary to plan and schedule the work carefully in order that it could be carried out with maximum efficiency and with a minimum of interference with traffic. For this reason the work on both bridges was done at night. Essentially the same procedure was followed on both structures so that a description of the manner in which the work was done on the shorter

bridge will suffice for both of them.

The work was done following the passage of a train scheduled to move over the bridge at about 1:15 A. M. the objective being to complete it in time to allow the passage of another train scheduled to move over the bridge at 5:25 A. M. During the interim, there was only one scheduled movement over the bridge. This was a passenger train, and to avoid the necessity of moving it over the bridge the passengers were transferred from a station on one side to a station on the other in buses.

As much preparatory work as possible was done during daylight hours in advance of the major operation. This preliminary work consisted largely of the removal of the timber and metal guard rails from the span, and the assembly on the site of all the materials required for the project. Also a series of floodlights was fastened to the top lateral bracing of the truss span. These lights, for which current was provided from the primary signal supply, had the effect of illuminating the work brightly. The man power assembled for the job included a bridge gang for renewing the ties, and two section gangs for doing the track work.

Following the passage of the last train at 1:15 A. M. the spikes were removed from the running rails, the rail anchors were knocked off, and the rails were removed to the ends of the bridge. The old ties were then disposed of by dropping them to the ground below. Beginning at one end of the bridge, the new ties were applied progressively across the structure and the work of placing the rubber pads and replacing the existing track rails was kept abreast of the timbering work. The new ties applied are creosoted yellow pine members, 9 in. by 9. in. in cross section and 10 ft. long. They were predapped for the stringers and prebored for the anchor bolts and the fastenings for the timber guard rails, but the holes for the spikes were not prebored because it was not known at the time of treatment what pattern would be required for these holes.

The running rails of both tracks had been restored across the bridge and sufficient line spikes applied to permit the passage of the 5:25 A. M. train, which arrived on time and moved across the bridge without delay.

As stated, the procedure followed on the longer bridge was essentially the same as that described above, the only major difference being the fact that, because of the greater length of the structure, it was necessary to do the work in three installments during as many different nights.

This work was planned and executed under the general supervision of Fred Corporon, superintendent way and structures, of the South Shore, and L. F. Pohl, office engineer way and structures. C. R. Merriman, engineer maintenance of way and structures, was in direct charge of the work on the ground, and was assisted by Don Scroggin, junior engineer.

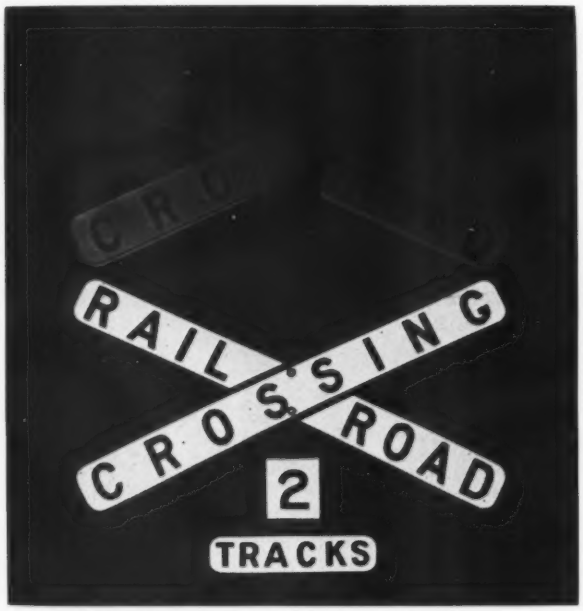
AHEAD OF THE MACHINE, ballast in the intertrack space is in position to be scooped up by the two bucket conveyors

BEHIND THE MACHINE, ballast is deposited both between and outside of the rails in the correct position for tamping

New Machine for Uniform Ballast Placement

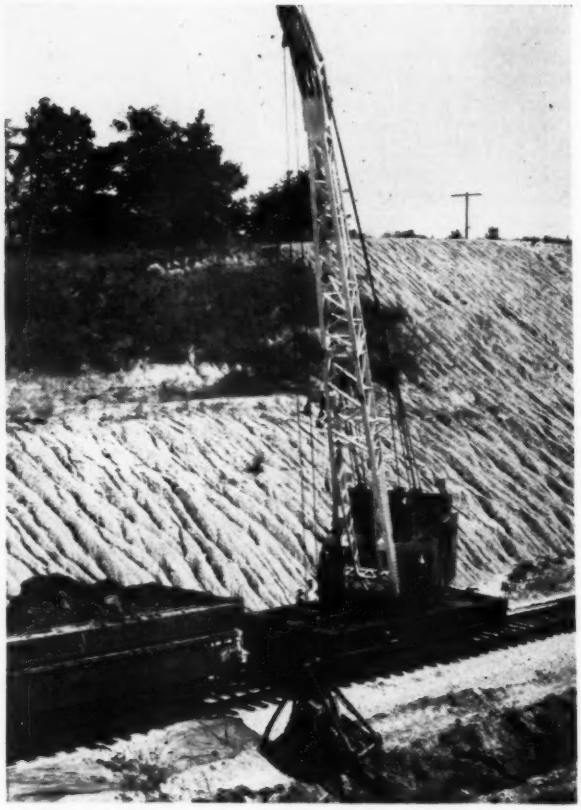
• The McWilliams Ballast Distributor, a track-mounted machine for placing ballast in position for tamping, has recently been developed by the Railway Maintenance Corporation, Pittsburgh, Pa. The self-propelled unit, which is operated by one man, is designedto pick up ballast from the intertrack space or shoulder, by means of two conveyors mounted on either side of the machine, and deposit it in the correct position for tamping—both inside and outside the rail. The amount of ballast picked up is controlled by raising and lowering the hydraulically-operated bucket conveyors. Ballast is pulled into the path of the conveyors by means of adjustable gathering wings. This construction is said to permit the machine to operate within clearance limits since the wings pull the ballast in from the entire intertrack space without fouling the adjoining track. For travelnng or loading for shipment, the two conveyor sections can be readily folded into the sides of the ballast distributor.

The ballast picked up by the conveyors is deposited in a hopper which has capacity of approximately 2 cu. yd., and which is equipped with bottom openings so located as to permit ballast to be placed at the desired position with relation to the rail. The quantity of ballast distributed is controlled by raising and lowering the hopper. Slides in the hopper openings can be closed for carrying ballast to crossings or switches where ballast cannot be unloaded. All functions of the machine are controlled from the operator's position. Operating speed of the ballast distributor is beteen 800 and 1,000 ft. per hr. Traveling speed is 18 m.p.h.



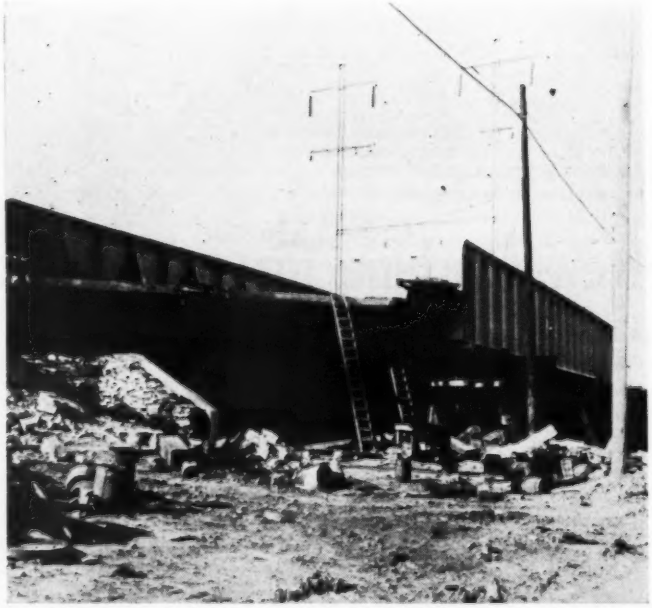
IN DEMONSTRATION on the B&O, a new reflectorized crossbuck, incorporating Minnesota M&M's "Scotchlite" reflective sheeting, is mounted below a standard white painted crossbuck of a type formerly used. The reflective sheeting used on the sign is claimed to reflect 220 times as much light as paint

NEW LOCOMOTIVE CRANE maintaining drainage ditches on the TP&W is this Industrial Brownhoist Model DE-50. Powered by two Caterpillar D337 engines, each delivering 219 hp. at 1800 r.p.m., the crane can travel at speeds up to 20 m.p.h., running free, and 4 m.p.h. with a tractive load of 24,000 lb.



News Briefs in Pictures . . .

TWO TUNNELS are being daylighted and extensive repairs made to a third as a result of an earthquake which struck the SP at Tehachapi, Cal., July 21. Some 200 pieces of grading equipment were moved into the area to expedite rehabilitation work—*UP Telephoto*



PHOTOGRAPHED while under construction, this 110-ft. span railroad bridge carries the tracks of the Pennsylvania over the Schuylkill Expressway. Approximately 44 tons of ½-in. wrought iron plate was used in the bridge deck to guard against corrosion and keep maintenance costs to a minimum, besides supporting the ballast roadbed

PRODUCTS OF MANUFACTURERS

New, improved equipment, materials, devices

(For additional information on any of the products described in these columns, use postcards, page 903)

ELECTRIC SWITCH HEATER

A NEW type of electric switch heater, consisting of several separate electrical heating units, mounted on the gage side of the web of the rail behind the switch point, has been developed by The Rails Company, New Haven, Conn.

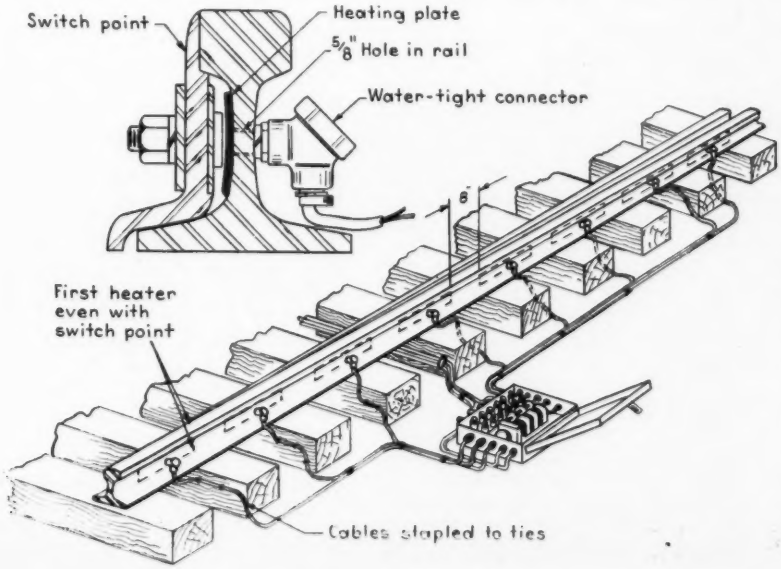
Each heating unit, known as a heating plate, is ⅛ in. thick, 3 in. high, and 15 in. long. These plates are mounted flat against the gage side of the web of the stock rail. As shown in the drawing, the first heater unit extends beyond the facing point end of the switch points and the remaining heater units are spaced about 8 in. apart along the stock rail behind the switch point.

A total of 16 units are used for a 15-ft. point, or 20 for a 20-ft. point. Each heater unit is held in place by a stud 9/16 in. in diameter, which extends from the back of the heater plate through a ⅜-in. hole in the web of the rail. A water-tight condulet fitting applied to the end of the 9/16-in. stud, which has a special screw cap, serves as a small junction box where connections are made between the wires from the heater element and the cable extending to the controller and source of electrical feed. The electrical element in each heater is rated at 500 watts at 110-220 volts a.c.

The manufacturer claims an advantage of his system is that the 45 sq. in. of the flat surface on each plate is in direct contact with the surface of the web of the rail, thus transferring to the rail a maximum amount of the heat generated in the electrical element.

Where sufficient alternating current is available and the maximum demand costs are not prohibitive, the circuits can be installed to feed all of the heater elements in an entire switch layout at the same time. Where there is not sufficient current at a location, the design of this new system makes it possible to minimize the maximum current demand by feeding the heaters separately in groups rather than feeding them all at one time. The controller includes a synchronous motor which drives a shaft with cams which operate micro-switches that feed groups of heaters at succeeding periods of time. These may be adjusted for timing to suit prevailing conditions. Thus, where switches equipped with a total of 16 heaters connected in groups of 6, 6 and 4, the maximum power demand is 3 kw. In a 24-ft. switch layout, including 24 heaters in groups of 8 each, the maximum demand is 4 kw.

The manufacturer states that by thus reducing the maximum current demand, these electrical heaters can be installed wherever connections can be made to commercial sources of power, with a minimum of expense for power transformers, controllers and wires. Also, it is pointed out that, because of a low demand charge in this system, it is practical to install this type of electric heater at outlying power switches, such as in C.T.C. territories.



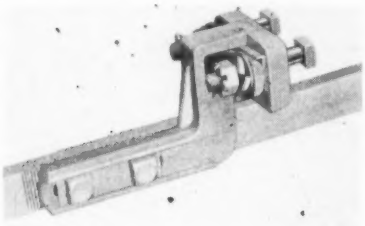
NEW VERTICAL SWITCH ROD

THE Ramapo Ajax division of the American Brake Shoe Company, Chicago, is introducing an adjustable vertical switch rod, termed the Type "MJ" Adjustable Switch Rod, which permits an overall adjustment amounting to 3 in. With this adjustment, it is said that the rod can be used in various switch designs for both head and back rods, thus simplifying installations and allowing the exact throw to be readily obtained.

The new rod is patterned essentially after the company's Type "M" design and is furnished with extra strong clips having serrations that correspond with those of the heavy 2½-in. by 1¼-in. rod. The teeth of these serrations are larger and deeper than normally used in switch rods, there being six per inch machined with rounded roots and tips. Two 1-in. heat-treated

For additional information on any of the products described on these pages, use postcards, page 903.

rod bolts, equipped with spring washers, castellated nuts and cotters, are used to hold each clip to the rod to assure serviceable tight

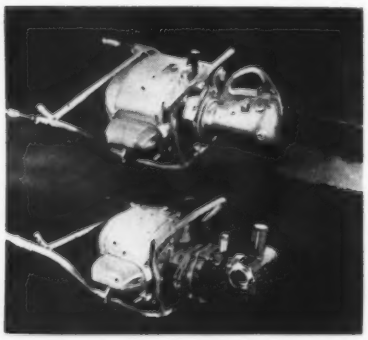


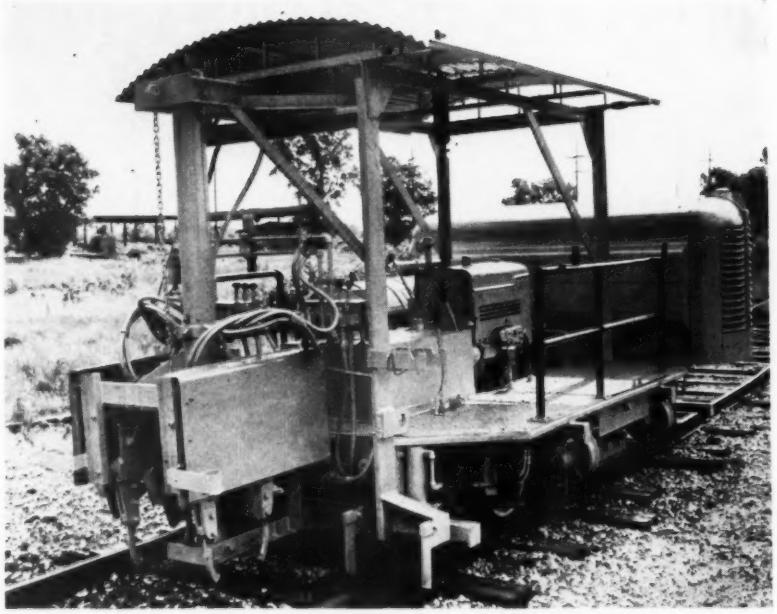
The clip assembly of the new switch rod

joints and a reduction in wear that normally develops at the rod bolt holes. The point bearing, bearing cap, adjustable shims, grease fittings and other features of the Type "M" design are retained in the new rod. The rod and clip assemblies are said to be sufficiently strong to permit the use of the "MJ" design at the busiest locations in heavy-duty hand, machine or spring-operated switches.

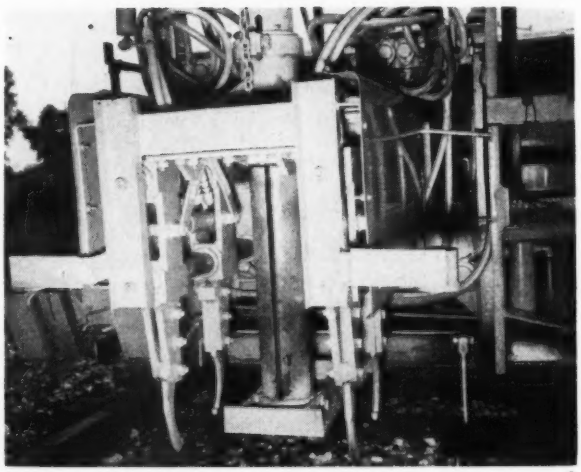
PUMP DRIVEN BY CHAIN SAW

AN 18-LB PORTABLE PUMP that attaches to a Mercury-engine powered Disston Model DA-211 chain saw engine without any modification has recently been developed by the Kiekhaefer Corporation, Fond Du Lac, Wis. Especially adaptable to fire fighting, the 63-lb. pump will deliver 50 g.p.m. at 125 p.s.i. The manufacturer claims that the change from pump to chain saw and vice versa can be accomplished in less than one minute without the use of any tools.





Above — The new machine has a running speed of 25 m.p.h. and has a powered set-off mechanism



Right — Close-up view of the claw-like spacing head at the front of the machine

TIE SPACER— NIPPER—SPIKER

AN EXPERIMENTAL model of a tie spacer-niper-spiker built by Pullman-Standard Car Manufacturing Company, Chicago, is now working on a large eastern railroad. This machine is a self-propelled single unit which combines all of the machinery necessary to: (1) space the tie at the desired interval; (2) hold the tie firmly against the base of the rail; (3) spike it.

It is said to be the first maintenance-of-way machine to take advantage of the electro-magnetic track brake used so successfully on the modern electric P.C.C. street car. These brakes are applied to the track to give added holding power during the period when the machine is pulling a tie to a new position in the track, thus providing much greater pulling power than would be obtainable with the weight of the machine alone. The car also has a special metering device for measuring the intervals at which the unit stops as it works down the track, and can be preset to handle any spacing requirements. A hydraulically operated claw-like spacing head then positions the tie at the pre-determined point and holds it firmly against the rail while it is being spiked.

Four standard spike guns can be used, but normally only two would be used for the tie-spiking operation. Each tie-spiking gun is controlled from the spike-man's platform located over each rail, thereby eliminating the time and effort spent in dragging the gun and hose from tie to tie.

TORQUE RAIL ANCHOR

THE Rails Company, New Haven, Conn., has placed on the market a rail anchor of new design which is interchangeable on all rail sections where tie plates are used. This appliance is a two-piece device, termed the Torque rail anchor, aad consists of a cam-like piece and a spring. The cam, which is a heat-treated malleable-iron casting, has a round shaft, hollowed by a ⅝-in. square opening, and cam-shaped rims having a number of flat contact surfaces for engaging the rail bases. The spring is 19/32 in. by 7/16 in. in section and is made of heat-treated spring steel shaped somewhat like the figure 3 and having a short hook at one end and a partial loop at the other.

This anchor makes use of the rail-spike holes of tie plates and the

pre-bored holes in the ties, and can be applied on the inside, the outside, or both sides of the rail. It is said to be easily applied by using a spike maul and any other track tool having a square section, such as a pick, a square tie-plug punch, or a bent ⅝-in. square bar. The cam is placed on the rail base with its direction arrow (cast on the outer faces of the rims) pointing toward the rail web. The short hook end of the spring is inserted into the hole of the tie plate and the other end is hooked over the cam shaft. Using a spike maul, the spring is driven into the tie-plate hole until the short hook at the end snaps over to engage the underside of the tie plate. Then, using a pick or other suitable tool, the cam is rotated to cause the cam shaft to lift from the rail and to be forced tightly up against the spring. The cam is rotated from one contact surface to the next until proper spring tension (determined by means of a template supplied by the manufacturer) is obtained.

BOLT TIGHTENER

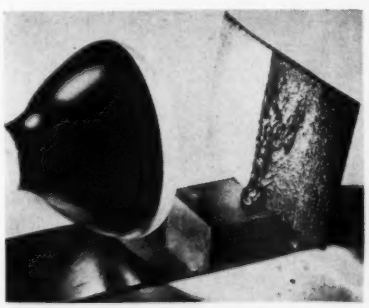
HAVING the section men and terminal crews in mind when tightening bolts periodically and for the year-'round maintenance of loose bolts, the Woolery Machine Company, Minneapolis, Minn., has developed a bolt-tightening machine, termed the Woolery Power Bolt Tightener. This machine is said to be easy to operate and to maintain, and will enable two men to do the work of eight equipped with hand wrenches, or an average of from 200 to 300 joints a day.

This machine has two socket wrenches, one for turning nuts on each side of the rail, which are driven by a Wisconsin air-cooled gasoline engine through a chain drive, a reverse gear box and a power torque clutch. The wrench chucks operate at one speed and their direction of rotation can be instantly reversed by means of a lever. An automatic torque release lever engages or disengages the clutch to insure uniform tightness to all bolts. While automatic in action, this feature is easily adjusted to the desired tensions. Both the chuck-reversing lever and the torque-release lever are conveniently located for the operator to control the action of the wrenches, and the sockets are easily changed by merely raising slide bars.

A pilot wheel at the rear of the machine is adjustable for the different rail sections so that the chucks are at the correct height for engaging the nuts without any lifting of the machine being required of the operator. Set-off wheels are provided for quick track clearance of the machine.

INSULATING ROOF COATING

AN ALUMINUM-asbestos roof coating, which is reputed to lower temperatures in buildings 15 to 20 deg. F. and permanently prevent roof deterioration, has been announced by the Monroe Company, Inc., Cleveland, Ohio. Known as Asbestolite, the coating is made of first quality aluminum flakes and high-grade asphalt and asbestos suspended in a waterproofing oil vehicle. According to the manufacturer, the doubly-pigmented aluminum flakes "leaf" over the top of the asphalt and asbestos, forming an attractive, firm, metallic shield which reflects the hot rays of the sun, seals out moisture, and is impervious to rust, corrosion and fumes.



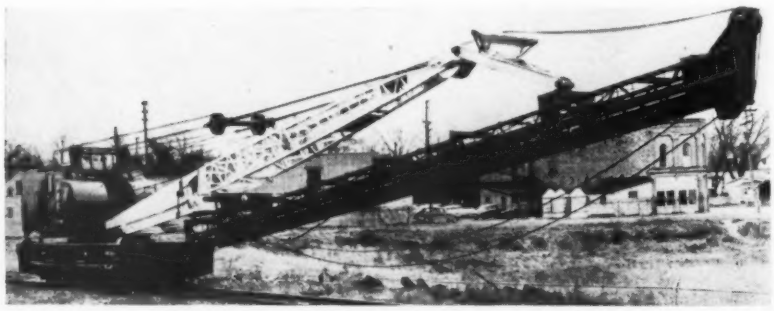
The manner in which Asbestolite reflects heat is shown in the accompanying illustration where the rays of an infra-red lamp are focused on a sample roofing slab. The light

For additional information on any of the products described on these pages, use postcards, page 903.

portion at the left is coated with Asbestolite, the center portion with a black roofing material, while the right-hand section is uncoated roofing paper. The two latter surfaces were found to retain heat long after the Asbestolite area had completely cooled. The compound is said to be highly fire retardant and can be applied to any type roof.

DIESEL-ELECTRIC CRANE—PILE DRIVER

THE INDUSTRIAL Brownhoist Corporation, Bay City, Mich., has recently developed a new folding pile-driver leader for application to their line of diesel-electric locomotive cranes. The new leader features automatic folding into the clearance position as well as power folding so that the entire leader may be placed on a car in front of the crane and quickly disconnected for transport from job to job. The leader can be arranged for either manual or power battering and can accommodate standard pile hammers of various sizes. The cranes are supplied in models which have travelling speeds of 12 m.p.h. and higher and drawbar pulls of up to 18,000 lb. at low speed. The electric travel motors under the cranes can be quickly disengaged when it is desired to include the units in trains.



Above—The leaders in driving position

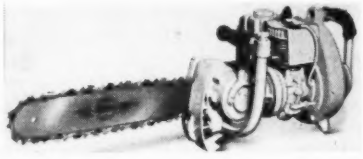
Below—The machine with leaders folded

NEW PORTABLE DRYER-MIXER

BY COMBINING an aggregate dryer with a twin-shaft pugmill mixer, the Barber-Greene Company, Aurora, Ill., has developed a new unit designed for maintenance and patching work with either hot or cold bituminous mixes or concrete. The machine, called the Mixall, has a 3-cu. ft. capacity and the ability to produce up to 5 tons of hot mix or 10 tons of cold mix per hour. Mounted on two pneumatic-tired wheels, the unit weighs 6650 lb., and is powered by a 22-hp gasoline engine. Outstanding features of the Mixall are: conveniently grouped controls for skip pugmill discharge, dryer drum, and dryer discharge; three-position adjustment for meeting various truck hitch heights; hydraulic jack; heavy-duty drying drum; adjustable axle; anti-friction bearings; triple coil springs; loading and inspection ladder; all-welded channel section frame; accessible power unit; and roller chain trunion drive. The Mixall is 7ft. 7½ in. in height, 10 ft. 3 in. long, and 7 ft. 11 in. wide. The skip, which is equipped with an automatic top limit throw-out, features a 14-in. shoveling height and a 50-deg. dumping angle. The dryer is equipped with a Hauck low-pressure oil burner for burning kerosene, and a Roots-Connersville blower and Viking pump.

LIGHTWEIGHT CHAIN SAW

THE Reed-Prentice Corporation, Worcester, Mass., has announced the availability of the new lightweight Timberhog Bantam chain saw. Fingertip controls and full 360-deg. swivelling are said to provide easy handling in all cutting positions. Furnished complete with

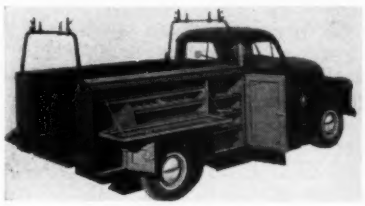


an 18-in. guide bar and chain, the gasoline-driven saw weighs only 27¼ lb. The use of aluminum and magnesium parts makes possible light weight and yet affords ruggedness to withstand hard usage. A new innovation in this saw is an

automatic chain oiler which is designed to supply oil to the chain during all cuts. The newly-designed narrow guide bar is claimed to be ideal for pulpwood cutting and the planer-type chain is said to assure fast cutting of all timbers. The rewind starter and the flywheel-type magneto are designed to provide quick starting under all conditions. An automatic clutch halts the chain when the engine is idling.

COMPARTMENTAL TRUCK BODIES

TWO NEW service and maintenance truck bodies, designated Series 44 and Series 44-L, have been added to the line of public utility bodies and equipment manufactured by the McCabe-Powers Auto Body Company, St. Louis, Mo. These bodies, which are adaptable to railroad usage for the transportation of work equipment, signal maintenance equipment and other tools and parts, are divided into compartments equipped with



shelves, trays, material hooks and parts bins. Removable shelves in each vertical compartment are padded and furnished with elastic hold-down bands. An overhead rack, for transporting ladders, poles, etc., with adjustable brackets, is furnished as standard equipment. Doors are of watertight construction, fitted with flush-mounted, slam-action handles and cylinder locks, keyed alike. Series 44 bodies (as shown in accompanying illustration) are available in 75-in., 90-in., and 104-in. lengths, for installation on chassis having cab-to-axle dimensions of approximately 40 in., 48in., and 60 in., respectively. The Series 44-L bodies differ only in that they are supplied with an additional superstructure and are furnished in 90 and 104-in. lengths for 48-in. and 60-in. chassis. Optional equipment includes: telescopic roof, hinged ladder rack to permit use of ladder from rear of truck, side-mounted ladder rack, pintle hook, rear bumper step, pole setting spool, and other accessories to meet individual requirements.

POWER SAW IS TRACTOR MOUNTED

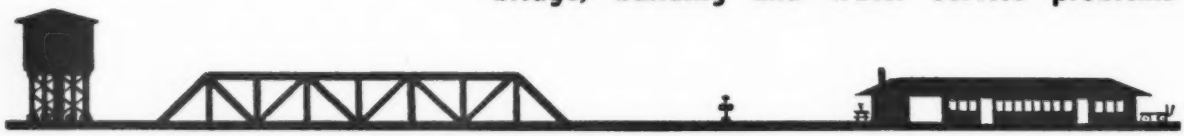
A NEW POWER SAW drive that mounts either a heavy-duty chain saw or a circular saw to the Gravely tractor, has been announced by the Gravely Motor Plow & Cultivator Co., Dunbar, W. Va. The saw units mount directly on the front of the tractor and are interchangeable by removing and replacing a heavy self-locking nut and two metal collars. The chain-saw unit, designed for timber falling and bucking, incorporates a 24-in. bar, with longer bars available on special order. The circular unit, designed for clearing of scrub trees and brush, has a blade diameter of 26 in. The units may be purchased singly.

SELF-PROPELLED WAGON DRILL

SCHRAMM, Inc., West Chester, Pa., has announced a new self-propelled, self-powered wagon drill, called the Deluxe Pneumafeed. The drill, designed for attachment to the Schramm Pneumatractor, is said to have the ability to drill in a 180-deg. arc at any angle and at a distance of 6 ft. from the rear of the tractor by means of an extension arm attached to a vertical centerpost. The device, which can be used for both rock drilling and paving breaking, is constructed so as to permit drilling horizontally at a distance of 10 ft. above ground level, or 3 ft. below. When in transit, the Deluxe Pneumafeed fits in front of the rear tractor wheel and close to the tractor body, permitting normal travel.

WHAT'S THE ANSWER?

An open forum for maintenance men on track, bridge, building and water service problems



Materials for Radiant Heated Floors

What types of floor surfacing materials are most suitable for use with radiant heating systems? Why? How should the flooring be applied to produce the most effective results? Explain.

Good Installation Essential

By Engineering Service Department
A. M. Byers Company, Pittsburgh, Pa.

Though our direct interest in the field of radiant heating is confined to piping, as a pioneer in this field we have had the opportunity to investigate many radiant-heating installations and to observe the performance of the floor surfacing materials used. In addition to the knowledge gained from our own experience are the findings of the manufacturers of floor-surfacing materials, with whom we are frequently in contact. On the basis of this information, we believe that it can be reasonably concluded that any of the commonly used floor surfacing materials can be used satisfactorily with radiant heating if sound installation procedure is followed.

Because of the thermoplastic qualities of most resilient flooring materials, these floors tend to become slightly more soft if the surface temperature runs abnormally high. However, in most radiant-heating systems, the normal temperature at the surface of the concrete slab is 75 deg. to 80 deg. F., and rarely exceeds 90 deg. This means that the usual surface temperature where radiant heating is used is not as high as those often resulting from the direct rays of the summer sun. The usually prescribed furniture-rest devices will provide adequate protection against indentation. Tests do not indicate that the use of radiant heating causes excessive drying action which might shorten the life of any resilient flooring material or that it has any adverse effect on the adhesive used in installing it. Thus, resilient floor coverings can be chosen for use in radiant-heating installations by much the same standards as when used with other heating systems.

Where concrete is poured directly on the ground, the problem of surface moisture is of primary consideration where a floor covering is to be used. The question as to how deeply moisture will penetrate concrete is controversial. In some areas it is doubtful if the penetration could exceed one inch, while in Virginia, for example, the state specifications require that, where a salt content is present in the atmosphere, a 3-in. margin must be allowed for seepage. To be on the safe side it is usually advisable to provide a fill of crushed stone or washed gravel under a grade-level concrete slab. Even this precaution may not eliminate the problem of surface moisture, however, for in some climates, atmospheric moisture frequently condenses on the cool surface during the summer months. Asphalt tile will resist this moisture and for this reason manufacturers of resilient floor surfacing materials recommend that it be used. This holds true not only where radiant heating is used but for any conventional type of heating as well.

Terrazzo is a good conductor of heat and lends itself well to radiant-heating installations. The National Terrazzo & Mosaic Association recommends that there be a covering of from 1 in. to 2 in. from the pipe to the finished surface. However, no heating coils are to be placed in the terrazzo itself.

Answers to the following questions are solicited from readers. They should be addressed to the What's the Answer editor, *Railway Engineering and Maintenance*, 79 W. Monroe St., Chicago 3, and reach him at least 30 days in advance of the issue in which they are to appear. An honorarium will be given for each published answer on the basis of its substance and length. Answers will appear with or without the name and title of the author, as may be requested. The editor will also welcome any questions which you may wish to have discussed.

To Be Answered In the December Issue

1. How do alloy and heat-treated rails compare with standard carbon steel rails in resistance to shelling and detail fracture? Under what conditions of service, if any, is the use of such special rails warranted? Explain.

2. What are the advantages and disadvantages of using automatic steam generators to heat shops? Other railway buildings? Explain.

3. There is a trend toward the use of lower grades in the body tracks of hump-retarder classification yards. What consideration or developments have brought about this trend? Explain.

4. Should flame-shortened eyebar members of a pin-connected truss be retightened by this method when they become loose? If so, how frequently should the tightening be done? What factors determine this frequency? Explain.

5. Is an electronic scale practicable for railway use? How does it operate? How do its facilities and methods of operation differ from those now in use? Explain.

6. What economical methods are available to prevent the freezing of water in elevated tanks, especially where the consumption is small? Explain.

Heat should not be turned on in the coil until the terrazzo is seasoned. To do so would bring about undesirable "precuring." According to the Terrazzo Association, standard specifications for the installation of terrazzo should govern its application when used with floor-type radiant heating.

A wood surface over radiant-heated concrete may also be used with good results when proper precautions are taken in its application. Well-dried lumber must be used. Obviously if the lumber is green, undue shrinking will result, regardless of the type of heating unit employed. Many designers have chosen to use mill-prefinished flooring, as the specifications for this type of wood allow for a moisture content of not more than 5 or 6 per cent.

It is advisable to operate the heating plant for 48 to 72 hr. prior to the installation of the wood flooring. This permits the thorough drying of the concrete slab. Concrete retains a substantial amount of moisture even after it has hardened. Were the flooring to be installed before the concrete dried, it would absorb the moisture driven from the slab by the introduction of heat, causing it to first swell and buckle, then contract and develop cracks in drying out.

Once the concrete is thoroughly dry and the heating plant is in operation, it is practically impossible for moisture to reach the floor surface. However, when the system is shut off, as during the summer months, the problem of moisture may again present itself. For this reason, unless the site is usually high and well drained, a moisture barrier should be provided between the fill and the slab or between the concrete and the wood floor. This membrane usually consists of one or more layers of tar or asphalt felt mopped on with hot pitch or asphalt, though other types are also utilized. As an alternative to the use of the membrane, a water proofing compound can be mixed with the concrete before it is poured, if the building site is well drained.

Sleepers embedded in the concrete or in a hot mastic on top of the slab are completely satisfactory as a nailing surface for wood flooring. The most successful application technique is to stagger the sleepers width-wise of the room, with the ends of adjacent pieces slightly lapped. Even when the sleepers are embedded in the concrete it is advisable to cover the slab with a mastic before applying the wood surface. If the floor is attached directly to the concrete, air pockets may form between the floor and the slab. When the heating unit is not in operation, the slab cools and the moisture in the air pockets may condense with adverse effect on the wood.

When a floor has a block pattern or parquetry, mastic alone is used to fasten it to the slab. Care should be taken to see that the amount of mastic is kept to the minimum. If too much is used, it could work out of the joints and cause some annoyance.

Wood flooring, though not affected itself, does affect the operation of the radiant-heating system to some extent. Wood flooring constitutes a resistance to the heat flow from the water to the room. To compensate for this, designers as a general rule select higher water temperatures for design purposes, thereby allowing a margin of 10 or 20 deg. for upward regulation should it become necessary.

The use of radiant heating with double wood flooring is not quite so easily handled because of the insulating character of the wood. It is suggested that before double wood flooring be used, an engineer be consulted so that an analysis of the conditions can be made. Placing the heating coils between the finished floor and a false floor or in the joist spaces also complicates the design problem, since the piping is exposed and must transfer its heat primarily by convection. Experience indicates that the resistance to the heat flow caused by such construction is several times as great as that encountered when the pipe is laid in bare concrete. Consequently, a considerably larger amount of pipe and higher water temperature is necessary. For this reason designers have made an effort to have the floor construction changed to permit grouting of the heating coils or to abandon the floor and place the coils in the ceiling.

Some Floors Soften

By I. H. Schram
Chief Engineer, Erie, Cleveland, Ohio

In recent years there have been many changes in the design of railroad stations and in the materials entering into them, with a view of improving their appearance architecturally and at the same time making them more highly functional and less expensive. This has resulted on the Erie Railroad in eliminating cellars in all of our more recently built stations. These stations have ranged from simple commuter stations to those in larger metropolitan cities such as Paterson, N.J.

Standard construction for these stations has provided solid brick walls with large picture windows, aluminum door and window frames and automatic heating supplied by oil or natural gas, if the latter is available. This has made radiant heat the most economical and satisfactory and it has been used in all of our new buildings. A 6-in. concrete floor is used under which is placed a 3-in. thickness of vermiculite concrete insulation. A layer of sisalkraft paper is provided under the vermiculite with a 1-in. edge insulation between the floor and the concrete foundation wall. This type of heating has worked out very well, but the question of floor finishing has come up.

In waiting rooms of the smaller stations it has been found that a colored concrete finish, integral with the base and incorporating a hardener, has given good service, is easy to clean and has an attractive appearance. It is relatively easy to apply, is low in cost, presents a serviceable finish and has a high coefficient of heat transmission.

In larger stations, where a greater number of people cross the floor and where the colored concrete is harder to keep clean, a terrazzo finish has been used. It is more expensive and cannot always be installed in small towns where specialized labor is rarely available to install it. However, it too has a high coefficient of heat transmission, gives a highly finished surface, cleans very readily and its appearance is very attractive.

The type of floor in toilets ordinarily follows that in the waiting rooms particularly since practically all building codes require that floors should be of an impervious material.

For use in ticket agents' offices or other offices connected with a station, where the comfort of employees must be considered, it has not been found practical to use either of the above types of floor. Floors in these offices are subject to intense wear at ticket windows and behind desks and, moreover, any type of tile that is used over the heated concrete floor must be

(*Continued on page* 892)

such as to be able to resist the tendency to soften from the heat. The most practical floor that we have found is a plastic tile which, although expensive, does stand up under this service. Asphalt tile, linoleum, etc., have not worked out when used over radiant-heated concrete floors because they have been found to pit excessively under the pressure of office furniture.

Control Heat, Use Any Floor

By E. D. NOLAND
Engineering Department,
H. A. Thrush & Co., Peru, Ind.

Although we are not floor-covering specialists we have designed a number of successful floor-panel and ceiling-panel radiant-heating systems. For floor-panel installation, we believe the following points should be given careful consideration: (1) Adequate drainage under the slab; (2) proper type of fill; (3) a good vapor barrier between the first and second layers of concrete; and (4) perimeter insulation to be carried to the base of the footing.

A number of suitable floor coverings can be used in a floor-panel heating system. Some of these include asphalt tile and similar types of flooring, linoleum, and single wood flooring bonded to cement with a mastic fill. Cork flooring would appear to be undesirable because it is an insulator.

Excessive panel temperatures should be avoided in any floor-panel heating installation regardless of whether a floor covering is used or not. Excessive temperatures will result if the job is poorly engineered and insufficient coil surface installed. For residential floor-panel heating, the panel surface temperature should be kept between 85 and 90 deg. F., even during the coldest weather. If the construction of the building is such that a higher panel temperature will be required for comfort, then better construction should be used rather than to permit an excessive panel temperature.

It has been our practice in designing panel heating systems with our control system to zone all rooms having different types of floor covering because the same panel temperature will not always be suitable. Such zoning permits more frequent operation of the circulator in the zone or zones having a type of floor covering that might delay heat transfer more than some other type of covering used in other parts of the building.

In addition to good designing, which means the proper amount of piping on correct centers, a good installation must be made by the trade and good sensitive controls are important. The method of heat control which we use operates principally on panel temperature rather than on room air temperature and does not permit the panel temperature to vary widely. By keeping close control over panel temperature, room air temperature must follow within very close limits; this eliminates sudden demands on the heating system to catch up with a falling temperature. A non-sensitive room thermostat will permit panel temperature to vary too much, and on the heating-up cycle will often result in an excessive panel temperature. It may also create an override in room air temperature resulting in ups and downs which, of course, are not desirable in any good hot-water heating system.

In summing up, we believe a great deal of trouble with flooring could be attributed to (1) Insufficient coil surface resulting in high panel temperature; and (2) lack of the proper temperature control equipment which is necessary for satisfactory, economical heating.

Avoid Excessive Floor Heat

By C. B. WHITTELSEY, JR.
Managing Director,
Asphalt Tile Institute, New York

Asphalt tile is one of the types of resilient flooring that is most commonly used on radiant-heated floors. It is especially applicable on floors that are on or below grade where many of the other types of flooring are not recommended because the moisture that may be present might seriously affect their composition and structure.

After investigating the effect of temperature on asphalt tile used on radiant-heated floors, our technical research committee states, "If the heating system is operated under conditions so that the temperature of the top surface of the asphalt tile will not exceed 85 deg. F. in the area directly above the heating pipes, no detrimental effects on the asphalt tile should occur."

Fastening Planks to Steel O. H. Bridges

What methods of fastening timber decks to steel overhead highway bridges are most effective in keeping plank or floor strips tight under traffic? Explain.

Good Fastenings Essential

By W. D. KEENEY
Engineer, Service Bureau,
American Wood-Preservers' Association,
Chicago

No one factor contributes more to both the service—that is, the riding qualities—and the durability of a treated-timber highway bridge deck than secure fastenings. When they are effectively restrained so that individual pieces will not loosen under traffic, timber floors will give many years of excellent service if protected by a good wearing mat to prevent mechanical wear or abrasion by wheel traffic. The timber, of course, must be thick enough to prevent excessive deflection between supports, and to distribute the wheel loads laterally so that they are not concentrated largely on one stringer.

On highway bridges a strip or laminated deck made up of plank on edge has largely superseded floors in which 4-in. planks in 8, 10, or 12-in. widths are laid flat. A continuous contact of the strips in the direction of traffic avoids the severe edge loading possible in flat plank designs where the adjoining plank can not be effectively connected together. The horizontal spiking prevents independent movement of the different pieces and distributes the concentrated loads over much greater areas than do floors in which the planks are not sufficiently connected to transfer loads to neighboring pieces. Moreover, the spikes are in the most effective position to prevent uplift and they cannot work loose.

Securely fastening down the ends of the floor plank or strips has proved one of the most effective means of keeping floors tight so that the riding quality of the deck will remain satisfactory without repeated maintenance. This is done most effectively by bolting the

(*Continued on page* 894)

curbs tightly through the floor to or through the outside stringers at intervals not to exceed 5 ft., so that the floor planks are clamped between the curb or felloe guard and the stringer. Short scupper blocks placed to elevate the curb above the deck for drainage should be omitted and the curb laid flat on the floor, so that all planks are clamped. Drains or scuppers may be framed through the curb at sufficient intervals, or galvanized metal drains carried through the deck at or near the inner curb line. When the timber is properly treated, moisture collecting at the curb floor joint will not cause decay.

Timber nailing strips are sometimes bolted to the upper flanges of steel beams for nailing the floors. In many cases, however, nailing strips are omitted and the floor members fastened directly to the beam flanges by bolts, lag screws, or special floor anchor cleats. These last are small metal plates notched to fit over the edge of the beam flange and drilled for spiking between adjacent floor plank or strips. These cleats are marketed for the usual stringer sizes and can be obtained with notching to fit any particular flange.

Cleats of this type proved very satisfactory for fastening a composite timber-concrete deck on a Maryland grade separation structure built in 1943 on a heavily traveled access road and designed for an H-20 loading. The 47-ft. spans are carried on four lines of 36-in., 150-lb. WF beams spaced 9 ft. 4 in. apart. The base of the composite deck is a laminated solid timber slab of alternate 2-in. by 4-in. and 2-in. by 6-in. pieces on edge. On the outside beams the timber base is cleated to the inside flange at every eighth strip. On interior beams they are used on both flanges and staggered in a uniform manner.

The thicker wood floors may also be fastened satisfactorily to the beam flanges by bolts or lag screws alongside of the flange edge if they are equipped with square-cut washers to project over and engage the underside of the flange. Hook bolts are sometimes used, but they tend to turn unless the hook extends entirely across and engages the opposite edge of the flange. Where the bolts go through considerable thicknesses of timber, spring washers should help materially in keeping the bolts tight despite small dimensional changes in the wood.

Size of Water-Treatment Chemical Vats

What factors generally determine the size of chemical vats in water-treating plants? What advantages, if any, might accrue from the installation of larger vats? Explain.

Larger Vats May Help

By E. R. Schlaf
Assistant Superintendent
of Water Service,
Illinois Central, Chicago

The factors determining the size of chemical vats in water-treating plants are: (1) Volume and hardness of water to be treated; (2) solubility of the vat solution; (3) attendance costs; (4) space limitations; and (5) cost of enlarging or remodeling facilities.

The two types of treating plants, namely lime-soda ash and internal, present slightly different problems. Discussion will first be confined to the internal type.

Regarding volume and hardness of water, consideration must be given to the fact that the sulfate hardness of surface waters is usually greatest when the water volume is greatest. Therefore, data should be collected in the winter months in most instances. This will determine the soda-ash requirements for any time interval.

The solubility of the vat solution must also be determined in the coldest part of the year. While soda ash is soluble to the extent of 28 per cent at 86 deg. F. and 18 per cent at 68 deg. F., it is only soluble to the extent of 7 lb. per 100 lb. of water at 32 deg. F. If the solution is too concentrated, plugged feed lines will result when they are chilled below critical points.

Regarding attendance cost, consideration must be given to the desired time interval of vat recharging. The so-called triple holiday, in which a national holiday falls on a Friday or Monday is a typical example. In one case, the vat is charged late Thursday afternoon and must be of sufficient size to last until Monday morning or an elapsed time of approximately 90 hr. Since there are 168 hr. in a week it can be seen that a plant engineered to handle a triple holiday load would require recharging only twice per week. Of course, frequent inspections to determine that the equipment is working properly are always desirable and should not be overlooked.

Regarding space limitations, it is sometimes economically feasible to build a special chemical vat for a particular location in order to reduce plant attendance to a minimum. In one case a 4,000-gal. square tank was tailor-made for a location originally designed for two circular vats having a combined capacity of 1,160 gal. The new vat is agitated by three 3-hp. mixers, and a 2,000-lb. charge of soda-ash is not uncommon. The former daily charge has been reduced to twice per week. In another instance, where a lime-soda plant had been converted to an internal-type plant, the clearwell was used for supplemental capacity. The solution of proper strength is made up in the regular chemical vat, dumped into the clearwell and later elevated as needed.

In lime-soda plants, it is possible to hold higher concentrations of soda ash in solution because of its reaction with lime to form highly soluble sodium hydroxide. However, the maximum lime slurry concentration should not exceed 1¼ lb. per gal. With this type of plant, especially with surface waters of constantly varying hardness, attendance is of greater importance, due to the necessity for a finer adjustment of the chemical feed. Therefore, vat enlargement to reduce attendance would be of questionable value.

Solve Each Case on Merits

By K. J. Weir
Vice-President,
W-M Corporation, Chicago

During the past ten years two factors have greatly influenced water-treatment facilities for steam locomotives, and particularly the size of chemical vats required for efficient treating-plant operation. One is the advent of diesel locomotives, with the subsequent

(*Continued on page* 896)

Look at the many advantages multi-purpose Macbeth Spike Anchors have over other types of rail fasteners!

REDUCES MECHANICAL WEAR:

4 Macbeth Spike Anchors clamp rails, tie and tie plates solidly together with a force of approximately 4½ tons. No hold down spikes or conventional wear-resistant devices required because *the tie plates can't shift.* Mechanical wear is reduced because there is no relative motion between the tie and tie plates.

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Macbeth Spike Anchors drive into the ties through the line spike holes of standard tie plates. *Every* Macbeth is immediately effective when fitted and *stays* that way. They hold the rail with a grip far exceeding the resistance of the ballast...and stop creep *both ways.*

NO MAINTENANCE:

Macbeth Spike Anchors when properly driven require no maintenance...because *they won't work loose.*

REDUCES IMMEDIATE AND LONG-RANGE COSTS:

4 Macbeth Spike Anchors per tie do the job of line spikes, hold downs and at least *2* conventional anchors (*4* when 2-way holding is needed)...and you don't need wear-resistant devices. Macbeths cut maintenance...and since they reduce wear, your tie renewal costs come down, too.

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problems of operation to serve both diesel and steam power over the same trackage. The second is the railroads' acceptance of the 40-hr. week, with its increased operating costs for the sixth and seventh days of the week.

This combination, with the continued increase in the number of diesel locomotives being purchased, has presented water-service engineers with an ever changing treating-plant problem.

However, there has never been a hard and fast rule which could be followed in regard to chemical vat size, because of the many variables present at the individual water station involved. Among these variables are: (1) The demand for water; (2) the rate of demand during the 24-hr. period; (3) the week-end demand; (4) the quality and hardness of the water supply; (5) chemical concentrations in the vats; (6) the labor cost of operating the plant; (7) the uncertainty as to when the railroad will be entirely dieselized, and many others.

The recent trend has been to make treating plants fully automatic. This in turn demands the use of the largest possible chemical vats, taking into account the variables mentioned above. In some instances, it has been possible to provide chemical vats of sufficient size for one week's operation at small outlying treating plants, and 24-hr. operation at others. But where the demand is extremely large, 8-hr. operation appears to be the maximum that can be utilized economically.

This has required considerable ingenuity on the part of water-service engineers, particularly with the limited funds for capital expenditures for facilities that appear to have relatively short usable life because of the constant change from steam to diesel power. Each problem must be judged and solved on its own merits.

Increasing Ties to 24 Per Rail

On main lines, what are the advantages and disadvantages of increasing the number of ties per 39-ft. track panel from 22 to 24? Explain.

Keeps Track Stable Longer

By J. P. McGHEE
Supervisor Track,
Pennsylvania, Coshocton, Ohio

The advantage of 24-tie track panels is mainly support—support vertically, laterally and longitudinally. The vertical support alone is obtained by an 9.09 per cent better distribution of the load to the ballast and sub-grade than that provided with 22 ties per rail. Since there is a difference of 1.75 in. from center to center of ties, there is less deflection of the rail between ties, thus reducing rail fatigue.

The narrower crib reduces the slewing of ties and creeping of the rail because more resistance is offered by the ballast when compacted in a narrow crib.

Mechanical wear is greatly reduced on ties, tie plates, and spiking by the additional support, and regaging is reduced on curves by approximately 10 to 15 per cent.

We have also found that the use of 24 ties per rail produces better riding track for high-speed passenger operation, and provides a more stable and rigid track over a longer period of time than fewer ties per panel.

The disadvantages of 24-tie spacing are few and can be readily overcome. For instance, the ties are too close to tamp with a pick and the cribs are harder to clean with a fork. In this day of nearly complete mechanization in the M/W department, no one wants to clean cribs with a fork or tamp ties with a pick. Consequently, the obvious answers to such disadvantages are mechanical crib cleaning and power tamping equipment for the out-of-face work, and spot tamping performed with any one of the many mechanical tampers available at this time.

Why Not Fewer Ties Instead?

By GEORGE S. CRITES
Division Engineer (Retired),
Baltimore & Ohio, Baltimore, Md.

There are so many variables involved in the problem of finding the economical and best spacing of ties in main-line track panels of 39 ft. that the advantages and disadvantages of 24 ties per panel are more in number than there are numbers of main lines.

A few of such variables are width and character of roadbed; drainage; sub-ballast section; ballast section and kind of ballast; kind, size and length of ties; character of rail fastenings; size of rail; character and speed of traffic; economical standard of maintenance possible or desired; and the out-of-pocket money which can be put into ties.

A partial and probably a satisfactory solution can be determined from a study of the results obtained in test sections of tie installations made by railroads in the past and continuing into the future.

In evaluation of such tests, all variables must be given their proper weight. For some main lines, such studies may indicate that 19, 20, or 21 ties per 39-ft. track panel may be nearly right and ecnomical, whereas, for others, 23, 24, or 25, may be the cheapest and best in the long run.

It would appear at this time that dieselization, improved roadbed conditions, increased weights of rail, better rail fastenings, improved tie conditions and the mounting costs of timber and other beneficial factors favor 19 or 20 ties per 39-ft. panel in preference to 24 or 25 in most main line territories. Of course, in heavy-traffic, mountainous territories using steam locomotives, the 24, or even 25, ties per panel may be necessary.

Gives Rail Better Support

By TRACK FOREMAN

The advantages in increasing the number of ties from 22 to 24 for each 39-ft. track panel are many. More ties give better support to the rail by absorbing more of the weight and thrusts of the rolling stock passing over it. They will keep the gage more uniform since the space between ties would be less, thereby strengthening the track. As a result, better surface, line, and gage would exist, thus lengthening the life of the rail by releasing the surface kinks. Finally, fewer rail failures would occur.

The main disadvantage would be the cost of applying the two additional ties. As can readily be seen, nearly all the ties would have to be respaced. This would be a

(*Continued on page* 898)

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One-man installation:

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very expensive job since it would have to be done more or less by hand. It would also disturb the ballast directly under the ties and consequently the track would have to be completely resurfaced immediately after this operation had been carried out.

Therefore the best time to make this installation would be at the time when the track was being given a general surfacing. Then the ties could be spaced to the proper intervals to obtain the 24 ties per 39 ft.

Grouting Fills to Prevent Washouts

To what extent, if any, is grouting of fills effective in preventing washouts during floods? Explain. Should the grouting methods used for this purpose differ from normal procedures? If so, how?

Grouted Gopher Holes Help

By John W. Poulter
Research Engineer,
Koehring Company, Milwaukee, Wis.

In almost every case, fills that have been stabilized by grouting and later subjected to the erosive action of flood waters have shown definite indications of increased resistance to washouts.

The grouting of loose areas, ground-hog burrows or gopher holes in levees and other embankments is common practice and has been found to be very effective in preventing washouts. This effectiveness is explained in two ways: (1) The increased stability provided by the grout prevents softening of the saturated embankment and increases resistance to erosion; and (2) all openings or porous areas which might otherwise allow a movement of water with consequent softening and erosion deep in the fill are shut off. There is no undermining, no further loosening of the embankment materials and no caveins of large sections. Thus erosion is confined to the surface where its rate of detrition is much slower.

In applying grout where washouts are possible, the procedure can be the same as used elsewhere. However, in such cases, it is very important that the fill be treated to its full depth, particularly at structures. The grout mixture should also contain sufficient cement to prevent any movement of water through the grout section itself.

Any Benefit Is Incidental

By L. R. Lamport
Chief Engineer Maintenance,
Chicago & North Western, Chicago

The pressure grouting of fills is carried out fundamentally for the purpose of stabilizing water pockets or slides which have developed in the embankment. During the month of April, this year, there was a considerable amount of high water in the Missouri River basin, and there were instances where embankments which had been stabilized by pressure grouting were partially or completely washed out due to the high-water conditions.

There were some cases where the pressure grouting probably reduced the amount of fill that would have been washed out if it had not been applied, but this was due to rather unusual results that were attained from the pressure grouting.

When grout is applied, it is impossible to tell in advance how the grout will circulate around the plastic limits of a water pocket or along the sheer plane of a slide. There are numerous cases where excavations through grouted embankments have failed to disclose tangible evidence of the grouting. In other words, there were no thick slabs or layers of the grout in evidence.

It is a practical impossibility for any railroad man to know definitely in advance where washouts will occur, and it is also practically impossible to inject grout into an embankment that does not have water pockets or slides. Consequently, any benefit that could be expected from the reduction of washouts in fills, due to grouting, would be incidental, as was the case in the high water along the Missouri River basin this year.

Satisfactory Crossing Flangeways

What are the essential characteristics of a satisfactory flangeway for bituminous grade crossings? What type of flangeway gives the best results? Explain.

"Bond" Planks Are Best

By R. H. Peak
Assistant to Division Engineer,
Illinois Central, New Orleans, La.

The main function of a flangeway at a grade crossing is to allow the free and unobstructed passage of the wheel flanges. A secondary function is to maintain a reasonably smooth-riding surface for highway traffic.

The use of treated timber "bond" planks of a thickness equal to the height of rail and tie plate combined can best serve both functions. This plank gives, adjacent to the rail, a smooth, stiff face that cannot be crowded over against the rail due to the action of vehicles passing over it. The wood has some resiliency, however, and will give or splinter enough to allow large stones or metal pieces which might fall into the flangeway to be mashed down when struck by a wheel flange.

The width of the top surface of these planks gives a smooth-riding surface which is kept in the plane of the top of rail and readily takes up the shock of vehicles passing over the open flangeway.

These timbers can be prepared at a central point on the system, pre-cut to correct size for the various weights of rail in use and prebored for spikes or lag screws. Any dapping necessary for placing them over the ends of tie plates can also be done at this central point. When handled in this manner, the planks are economical to use and easy to apply. They will require a minimum of maintenance through years of service.

Rails placed as guard rails are sometimes used to provide flange-

(*Continued on page* 900)

ways. If these rails are placed on the ties outside of the tie plates so that they can be spiked on both sides they will remain in place a long time without attention. However, this gives an excessively wide flangeway which is rough to street traffic and readily filled with dirt. If the rail is to be placed to provide a standard flangeway, the ends of the tie plates or the base of the guard rail, or both, must be sheared off. This reduces its resistance to overturning and makes this arrangement less desirable than bond planks.

Bond planks should also be used outside the rail for a smoother crossing, but in that location can be applied closer to the rail and the intervening space filled with bituminous material.

Creosoted Timber Satisfactory

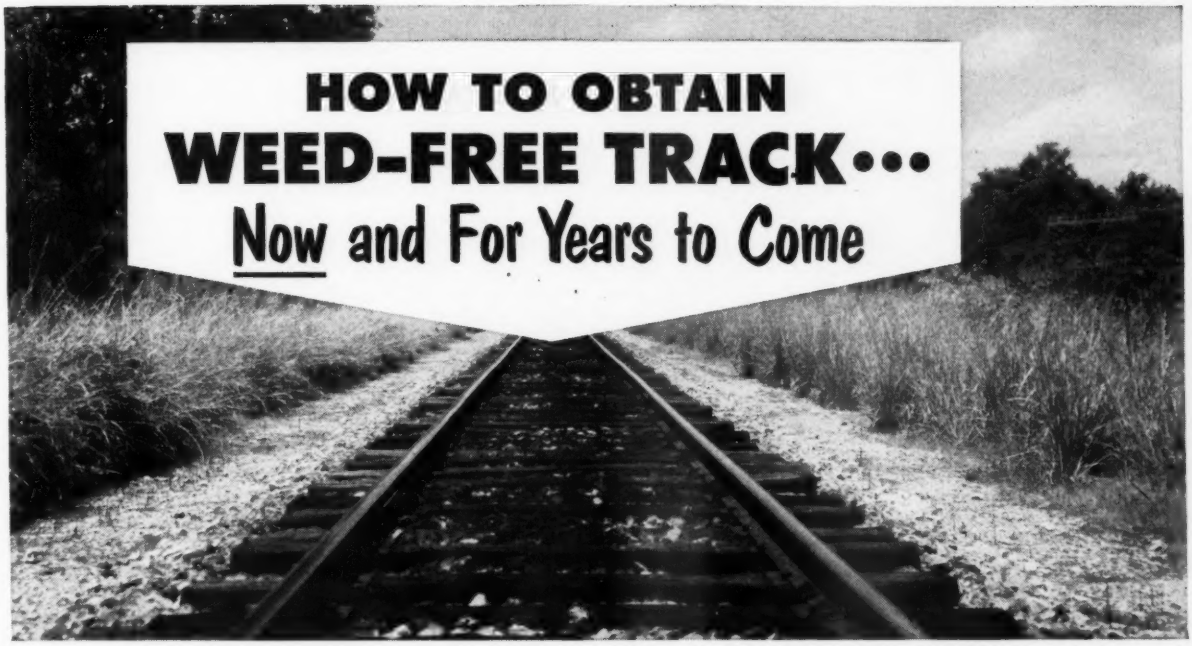
By GEORGE S. CRITES
Division Engineer (Retired),
Baltimore & Ohio, Baltimore, Md.

Continuous-groove girder rail provides the essential characteristics of a perfect flangeway for bituminous grade crossings under all-weather and all-traffic conditions, but economic and other factors preclude its universal use, so satisfactory substitutes must be found.

Where ice and snow are problems, continuous sections of old steel rails "balled" in and securely fastened, almost equal girder rail for important and heavily used crossings. Such flangeways are not justified other than where wheel flanges force foreign matter down between the rail and the bituminous paving.

Creosoted timber flangeways prove economical and durable at little-used crossings where ice and snow conditions are not bad, providing a continuous section of timber extends throughout the crossing. Both rail joints and flangeway joints are bothersome in highway crossings.

Other than for conditions mentioned above, it will generally be found economical and satisfactory to roll bituminous materials into place for highway crossings and then pour heavy hot pitch, tar, or asphalt along the rails and let flanges cut their own grooves to serve as flangeways. Such practice will do well for most crossings and will provide a flexible and continuous flangeway which can not possibly cause wheel-flange damage.



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THE MONTH'S NEWS
Railway Personnel

General

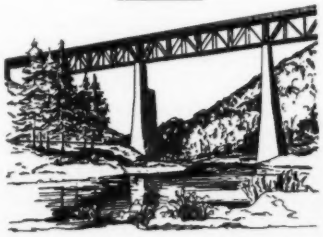
Paul D. Fox, treasurer of the Pennsylvania at Philadelphia, and an engineer by training and experience, has been appointed assistant vice-president—finance. Mr. Fox was born at Richmond, Va., on October 8, 1908, and was graduated from Virginia Military Institute with a degree of Bachelor of Science in civil engineering in 1930. He joined the Pennsylvania in July 1930 as an assistant on the engineering corps in the maintenance of way department, Maryland division, at Wilmington, Del., subsequently serving as assistant supervisor of track. From November 1935 to January 1937 he was on special duty under the vice-president and comptroller, and was later appointed supervisor of track. From October 1937 to January 1939 he served in the office of the vice-president and comptroller at Philadelphia and became assistant to the comptroller on the latter date. He was named auditor disbursements in 1941, general auditor in 1946, and treasurer in 1947.

H. Petrie, a track supervisor on the Tennessee, Alabama & Georgia, who was recently promoted to assistant superintendent on that road at Chattanooga, Tenn. (RE&M, August, p. 782), was born

H. Petrie

February 25, 1913, at Brooklyn, N. Y. Mr. Petrie, who studied mechanical engineering at the Institute of Brooklyn, entered railroad service in March 1942 as a laborer on the Southern at Charlottes-

(*Continued on page* 905)



ADDITIONAL INFORMATION

On Any of the Products Mentioned in This Issue

Below is a complete index of the products referred to in both the editorial and advertising pages of this issue. If you desire additional information on any of them, use one of the accompanying addressed and stamped postcards in requesting it. In each case give name of product and page number. The information will come to you directly from the manufacturer involved, without any obligation on your part.

Products Index

ville, Va., after having served with Sperry Products, Inc., as assistant operator, operator, and chief operator on rail-flaw detector cars since July 1937. He was appointed a student apprentice on the Southern in October 1942, and in December of that year was promoted to assistant supervisor of track on the Washington division at Charlottesville. Mr. Petrie was named supervisor of track on the Cincinnati, New Orleans & Texas Pacific at Dayton, Tenn., in June 1944, and in February 1949 was transferred to the Mobile division at Jackson, Ala., the position he held prior to his recent promotion.

John F. Piper, formerly a division engineer on the Pennsylvania, whose appointment as superintendent of the Susquehanna division, with headquarters at Williamsport, Pa., was announced recently (RE&M, July, p. 698), was born at Pittsburgh, Pa., on August 13, 1910, and received his B.S. degree in Civil Engineering from Ohio State University in 1933. Entering the service of the Pennsylvania on April 11, 1934, as assistant on the engineering corps at Pittsburgh, he subsequently served in that capacity at Trafford, Pa., Canton, Ohio, and Cleveland. Mr. Piper was appointed assistant supervisor of track at Jamesburg, N. J., on January 1, 1936, and was later transferred to Huntingdon, Pa. On September 30, 1939, he was advanced to supervisor of track and held that position successively at Akron, Ohio, and Terre Haute, Ind. Furloughed for military service in the Field Artillery from January 12, 1941, to January 28, 1946, Mr. Piper returned to the position of supervisor of track at Wilmington, Del., on the latter date. On January 16, 1947, he was promoted to

John F. Piper

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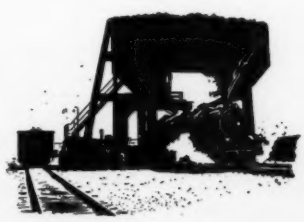


Railway Personnel (Cont'd)

assistant division engineer at Fort Wayne, Ind. He was named division engineer at Williamsport on February 1, 1948, and a year later was transferred to Altoona, Pa., where he was serving at the time he received his recent appointment.

J. C. Wallace, general manager of the Nickel Plate, has been promoted to vice-president operation, succeeding **F. S. Hales,** who has been named executive vice-president. Both men, engineers through training and experience, will maintain headquarters at Cleveland, Ohio.

Mr. Wallace was born at Harrisburg, Pa., and received his Civil Engineering degree from Pennsylvania State College in 1911. He entered railroad service as a structural draftsman with the Milwaukee Road in April 1914, and in 1918 became engineer of structures for the Lake Erie & Western, which was later consolidated with the NKP. He successively served as engineer of the LE&W district of the NKP at Indianapolis, Ind.; assistant chief engineer of the LE&W and Nickel Plate districts at Cleveland; assistant chief engineer of the system; assistant general superintendent; and chief engineer. He was appointed general manager on November 1, 1948.

Mr. Hales was born at Wilson, N. C. received his Bachelor of Engineering degree from North Carolina State College in 1913, and a Civil Engineering degree from Cornell University in 1916. From

J. C. Wallace

1913 to 1914, he was an instructor in mathematics at North Carolina State College. He entered railroad service in 1916 as a draftsman in the grade elimination department of the NKP and served in that capacity until June 1918, when he was commissioned a 2nd lieutenant in the U. S. Army. He returned to the NKP in December of the same year and successively served as assistant corporate chief engineer, assistant engineer of bridge design and steel inspection, and engineer of track. Between 1928 and 1931, he was assigned to engineering duties in con-

F. S. Hales

nection with the development of the Cleveland Union Terminal and the construction of tracks into the terminal. He later served as bridge engineer, assistant general superintendent, and assistant to the president. Mr. Hales was promoted to vice-president operation on November 15, 1947.

William A. Shea, assistant superintendent of the New York Central at Albany, N. Y., and an engineer through training and experience, has been promoted to superintendent of the Pennsylvania division at Jersey Shore, Pa. Mr. Shea was born at Buffalo, N. Y., in 1902, and entered the service of the NYC as a chain-

man in the engineering department in 1918. After rising to the position of assistant engineer, he transferred to the operating department as assistant train-

William A. Shea

master at Watertown, N. Y. He was named trainmaster at Watertown in 1944 and was transferred to Buffalo in 1946. He was promoted to assistant superintendent with headquarters at Albany on March 1, 1950.

Engineering

Albert A. Johnson, assistant chief engineer of the Lackawanna, has retired after completing nearly 45 years of continuous railroad service.

R. I. Simkins, assistant to engineer of bridges on the Atlantic Coast Line, has been promoted to assistant engineer of bridges, with headquarters as before at Wilmington, N. C.

H. D. Sipe, supervisor of track on the Maryland division of the Pennsylvania at Washington, D. C., has been promoted to assistant division engineer on the Ft. Wayne division at Ft. Wayne, Ind., succeeding **W. C. Gretzinger.**

C. U. Kitzmiller, assistant division engineer on the Rock Island, has been promoted to division engineer, succeeding **E. A. Matney,** with headquarters, as before, at El Reno, Okla.

Henry W. Neuebaumer, assistant division engineer on the Southern Pacific at San Francisco, Cal., has been appointed acting division engineer at that location replacing **J. E. Wheeler,** who is on sick leave.

Railway Personnel (Cont'd)

A. P. Crosly, assistant to engineer maintenance of way on the Reading with headquarters at Philadelphia, Pa., has been appointed assistant engineer maintenance of way in charge of bridge and building. The position of assistant to engineer maintenance of way has been abolished.

A. W. Eggers, assistant engineer on the Missouri Pacific at St. Louis, Mo. has been promoted to office engineer in the office of the chief engineer at St. Louis, succeeding **W. T. G. Topping,** who has retired. **E. H. Doyle,** assistant engineer at St. Louis, has been transferred to the Wichita division at Wichita, Kan., succeeding **D. H. Martin,** who has been promoted to assistant trainmaster at Atchison, Kan. **C. E. Stryker** has been appointed assistant engineer at Falls City, Neb., succeeding **L. E. Veron,** who has been transferred to the St. Louis Terminal-Illinois division at St. Louis.

James M. Curran, structural engineer for the Union Pacific, has been promoted to bridge engineer, with headquarters as before at Omaha, Neb.

H. J. Cherry, assistant engineer on the Canadian National, has been appointed acting division engineer, succeeding **F. A. Hunt,** transferred. Mr. Cherry will have headquarters as before at Capreol, Ont.

J. E. Gibault, chief of research, department of research and development of the Canadian National, has been appointed terminal construction engineer, with headquarters as before at Montreal.

A. E. Biermann, special engineer in the office of the chief engineer of the Terminal Railroad Association of St. Louis at St. Louis, Mo., has been promoted to principal assistant engineer. The position of special engineer has been abolished.

C. F. Parvin, engineer maintenance of way and structures of the Washington Terminal of the Pennsylvania, has been appointed division engineer of the Middle division. He has been succeeded by **H. J. McNally,** formerly assistant division engineer of the Susquehanna division, who has returned from military service.

A. V. Johnston, assistant chief engineer of the Canadian National at Montreal, has been assigned the added duties of maintaining coordination and cooperation between regional and headquarters engineering services. **G. L. P. Plow,** engineer of track, has been appointed assistant chief engineer and has been succeeded by **A. J. MacGillivray,** engineer of track, Western region. **T. H. Jenkins,** engineer of bridges, has been appointed engineer of bridges and structures. In addition he has been assigned the work formerly performed by the assistant chief engineer—construction, which position has been abolished. **J. C. King,** engineer of bridges, Central region, has been appointed assistant engineer of bridges and structures, a new position, consequent to the policy of concentrating the design and detailing of all bridges and foundation work at headquarters. All will have system jurisdiction with headquarters at Montreal. **E. J. Napier,** assistant engineer of bridges, Central region, has been promoted to engineer of bridges to succeed Mr. King.

Charles T. Popma, whose promotion to assistant division engineer on the New York Central at Cleveland, Ohio, was announced recently (RE&M, July, p. 698), was born at Jackson, Mich., on August 26, 1920. He entered the service of the New York Central in June, 1937, as a laborer at Jackson. Three months later, while studying at the University of Michigan, he was appointed chief of a surveying party at Jackson and Toledo, Ohio. In August 1942 Mr. Popma joined the U. S. Army, serving in the European Theatre. After leaving the armed forces in March 1946, he returned to the university and was graduated in June 1947 with the degree of Bachelor of Science in Civil Engineering. He then returned to the railroad as chief of a surveying party at Jackson and Niles, Mich., and served in that capacity until January 1948, when he was appointed assistant supervisor of bridges and buildings. In 1950 he was named supervisor of track at Jackson, the position he held prior to his recent appointment.

Paul S. Settle, whose promotion to division engineer on the Pennsylvania at Williamsport, Pa., was announced recently (RE&M, June, p. 602), was born at Philadelphia, Pa., on October 26, 1914. He

received a Bachelor of Science degree in Civil Engineering from Lehigh University in 1936 and joined the Pennsylvania as engineer apprentice in June of the same year. Six months later he was advanced to assistant on engineer corps, being assigned successively to the office of the chief engineer maintenance of way at Philadelphia, to a rail train, and to the Philadelphia Terminal division. On September 29, 1938, he became a trackman at Philadelphia, and in the following month he returned to the position of assistant on engineer corps, first at Columbia, Pa., and later at Elmira, N. Y. Mr. Settle was promoted to assistant supervisor of track at Barnesboro, Pa., on October 16, 1940, later being transferred to Wilmington, Del. On April 9, 1942, he was promoted to supervisor of track at Logansport, Ind., and later served in that capacity at Piqua, Ohio, and Perryville, Md. In 1949 he was named assistant division engineer at Altoona, Pa. He returned to the position of supervisor of track on Canton, Ohio, a few months later, but in 1950 was again named assistant division engineer at New York, the position he held prior to his recent promotion.

R. F. Lawson, office engineer on the New York Central at Springfield, Ohio, has been promoted to assistant division engineer of the Ohio division at Springfield, succeeding **Lyle Bristow,** who has been promoted to division engineer of the Illinois division at Mattoon, Ill. Mr. Bristow succeeds **E. A. Humphreys,** who has retired after 39 years of service.

Mr. Lawson was born July 10, 1918, at Springfield, Ohio, and attended Ohio State University. He entered railroad service on December 1, 1940, as an assistant engineer on the NYC at Springfield, which position he held until September 1, 1941, when he was transferred to Mattoon. After serving as assistant engineer at Indianapolis, Ind., from February 8, 1943, until December 16, 1945, Mr. Lawson was named assistant supervisor of bridges and buildings at Galion, Ohio. He was named office engineer at Springfield on September 1, 1947.

Mr. Bristow was born January 28, 1902, at Indianapolis, and graduated from Purdue University in 1926. He entered railroad service June 6, 1926, as an assistant engineer with the Cleveland, Cincinnati, Chicago & St. Louis. He subsequently served as assistant engineer and supervisor of track at various locations on the Big Four until September 1, 1947, when he was named assistant division engineer at Springfield.

Mr. Humphreys was born June 1, 1885, at Clinton, Ky., and received his higher education at Marvin College and the University of Kentucky. He entered the service of the NYC as an assistant engineer at Wabash, Ind., on April 1, 1913, and subsequently served in that capacity at Indianapolis and Cincinnati, Ohio. On August 1, 1916, he was promoted to assistant engineer maintenance of way and served in that capacity at Indianapolis and Mt. Carmel, Ill., until June 1, 1918, when he was named resident engineer—construction at Galion, Ohio. He served

(*Continued on page* 910)

in the latter capacity at Muncie, Ind., Sidney, Ohio, and Cincinnati until April 1, 1927, when he was promoted to district engineer of construction at Cincinnati. On April 1, 1933, Mr. Humphreys was named office engineer in the chief engineer's office at Cincinnati, and on June 20, 1939, was appointed assistant division engineer at Springfield. He was named division engineer at Mattoon on September 1, 1947.

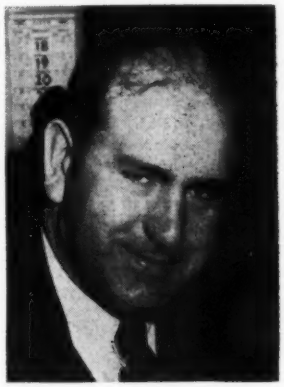
H. C. Archibald, assistant to the chief engineer of the Boston & Maine, whose promotion to assistant chief engineer at Boston was recently announced (RE&M, August, p. 782), was born July 26, 1891, at Everett, Mass. Upon graduation from Tufts College in June 1915, he entered the service of the B&M as a structural draftsman. He subsequently served as supervisor of bridges and buildings, assistant division engineer, division engineer, engineer of track, and assistant to the chief engineer.

C. S. Robinson, assistant chief engineer, who has retired to be succeeded by Mr. Archibald, was born April 10, 1887, at Portland, Me. After receiving his higher education at the University of Maine, he entered railroad service July 1, 1909, as a rodman on the Maine Central. From October 1912 until August 1913, he served as an assistant engineer with the MC, and from the latter date until August 1918, was employed in the office of the engineer maintenance of way. After serving in the Corps of Engineers U. S. Army, he returned to the MC on December 24, 1918, as general supervisor, maintenance of way. From July 1, 1924, until January 1, 1936, Mr. Robinson was engineer

H. C. Archibald

maintenance of way of the MC, and on the latter date he assumed the position of assistant engineer maintenance of way of the B&M and the MC. He was named assistant chief engineer of those roads on July 1, 1937.

F. R. Spofford, assistant division engineer at Dover, N. H., who succeeds Mr. Archibald as assistant to chief engineer at Boston, was born March 26, 1906, at Phillipsburg, N. J., and graduated from Tufts College in 1927. He entered rail-



F. R. Spofford

road service on March 1, 1929, with the Delaware, Lackawanna & Western, and in October 1929 joined the B&M as a structural draftsman at Boston. Mr. Spofford has subsequently served as assistant supervisor of bridges and buildings, supervisor of bridges and buildings, and assistant division engineer.

Glen A. Williams, engineer maintenance of way of the Central region of the Pennsylvania at Pittsburgh, who was recently promoted to assistant chief engineer maintenance of way of the Central region (RE&M, July, p. 701), is a native of Altoona, Pa., and a graduate of

Pennsylvania State College. Mr. Williams entered the service of the Pennsylvania in 1927 as an assistant on the engineering corps. In 1929 he was promoted to supervisor of track at Williamsport, Pa., and to division engineer of the Conemaugh division in 1939. He was ap-

Glen A. Williams

pointed engineer maintenance of way of the Eastern Ohio division in 1945, and in 1950 was named engineer maintenance of way of the Central region.

J. W. Wallenius, assistant superintendent of the Chicago division of the Pennsylvania, who has been promoted to engineer maintenance of way of the Central region at Pittsburgh (RE&M, July, p. 701), is a graduate of Yale University. Mr. Wallenius entered the service of the Pennsylvania in 1929 and was

J. W. Wallenius

promoted to supervisor of track in 1936, and to division engineer in 1944. He was appointed assistant superintendent of the Chicago division in 1951.

Barton Wheelwright, chief engineer of operation (system) of the Canadian National at Montreal, Que., has retired after 41 years of service. He has been succeeded by **Ross O. Stewart,** assistant chief engineer, construction, at Montreal.

Mr. Wheelwright, who was born at Minneapolis, Minn., on March 12, 1888, attended Massachusetts Institute of Technology, and received an A.B. degree from

(*Continued on page* 912)

Railway Personnel (Cont'd)

Harvard University in 1910 and an M.E.E. degree from Harvard in 1911. He entered railroading in June 1911 as a draftsman with the Grand Trunk (part of the Canadian National) at Toronto, Ont., and transferred to the signal department in April 1912. After serving as assistant signal engineer from December 1914 to June 1916, he was appointed acting signal engineer. In October 1917 he became engineer maintenance of way of the Grand Trunk lines in New England, and at the close of federal control he was named engineer-accountant to deal with matters pertaining to settlement between the corporation and the United States Railroad Administration. Mr. Wheelwright served as special engineer of the Canadian National from March 1923 to January 1928, when he became assistant to the chief engineer, and in July 1936 he was appointed engineer maintenance of way of the Central region. Three years later he was promoted to chief engineer, Central region, at Toronto, and in April 1945 was advanced to chief engineer, operations department, of the system, the position he held at the time of his retirement.

Mr. Stewart was born at Lindsay, Ont., on May 19, 1889, and was graduated from the University of Toronto in Applied Science in 1911. He began his career in the engineering department of the Dominion Bridge Company, and in 1913 he joined the Canadian Government Railways as assistant bridge engineer at Moncton, N. B. After the organization of the Canadian National, Mr. Stewart was appointed assistant engineer of standards, first at Toronto and then at Montreal. He was named engineer of bridge standards in 1931, and in 1932 became assistant structural engineer. Later in 1932, he was appointed assistant engineer of bridges, and was advanced to engineer of bridges in 1942. He had held the position of assistant chief engineer, construction, since last year.

Barton Wheelwright

Ross O. Stewart

V. C. Hanna, whose appointment as chief engineer of the Terminal Railroad Association of St. Louis at St. Louis, Mo., succeeding **Colonel H. Austill,** retired, was recently announced (RE&M, August, p. 782), was born August 15, 1898, at Prescott, Ark. He received his higher education at the Alabama Polytechnic Institute, receiving the degree of Bachelor of Science in 1920 and the degree of Civil Engineer in 1921. Mr. Hanna entered railroad service in May 1923 as an assistant engineer on the Mobile & Ohio at Jackson, Tenn., and in September 1924 was promoted to track supervisor at Tuscaloosa, Ala. In December 1925, he was named supervisor of bridges and buildings at Tuscaloosa, and in December 1927 was appointed assistant roadmaster at

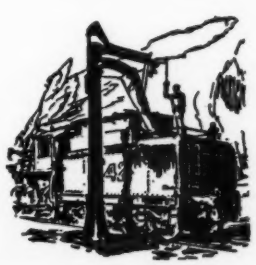
Murphysboro, Ill., with jurisdiction over track and bridge and building masters. Mr. Hanna was named assistant engineer system on the Mobile & Ohio at Jackson, Tenn., in December 1937, and, after serving in that capacity later at Meridian, Miss., accepted the position of chief engineer of the Litchfield & Madison at Edwardsville, Ill. In September 1941 he became assistant engineer in charge of construction for the Terminal Railroad

V. C. Hanna

Association of St. Louis at St. Louis, and in November 1941 was promoted to supervisor of bridges and buildings. He was named superintendent of bridges and buildings in August 1943, the position he held prior to his recent promotion to chief engineer.

Colonel Austill was born May 16, 1884, at Spring Hill, Ala., and received his higher education at McGill Institute, the University of Alabama, and Cornell University. He entered railroad service in October 1901 as a rodman on the Louisville & Nashville at Geneva, Ala. From January 16 until July 16, 1902, he served as rodman, topographer and levelman for the Mobile & West Alabama. In August 1902 he became a rodman with the Mobile & Ohio at Oklona, Miss., and in 1905 served as a rodman with the Republic Iron & Steel Co. From May 16 until August 2, 1906, he was resident engineer for the Mississippi Eastern, after which he was appointed assistant resident engineer on the L&N at Birmingham, Ala. From August 11, 1908, to April 30, 1910, he served as inspector and chief of party for the U. S. Corps of Engineers at Mobile, Ala., and on the latter date was named assistant engineer on the M&O.

(*Continued on page* 914)



Railway Personnel (Cont'd)

On April 1, 1911, he was promoted to bridge engineer on the M&O, which position he held until September 2, 1917, when he re-entered the U. S. Army. From January 1, 1919 until August 31, 1937, he again served as bridge engineer on the M &O, and on the latter date was promoted to chief engineer. From September 16, 1940, until February 15, 1941, Colonel Austill served as chief engineer maintenance of way and structures of the Gulf, Mobile & Ohio, and on the latter date was named chief engineer of the TRRA of St. Louis—the position he held at the time of his recent retirement.

Track

J. Guilbert, roadmaster on the Canadian Pacific at Ste. Therese, Que., retired recently after more than 45 years of service.

T. W. Hicks, roadmaster on the Canadian Pacific at Saskatoon, Sask., has been transferred to Two-Hills, Alta., to be in charge of location work there.

M. A. Dolcie, assistant supervisor of track on the New York Central, has been appointed acting supervisor of track, with headquarters as before at Dunkirk, N. Y., to replace **W. A. Smith,** who has been granted a leave of absence.

John I. Vardaman, section foreman on the Southern at Burnsville, Ala., has been promoted to supervisor of track at Oxford, Ala., succeeding **Robert A. Wharton,** who has been transferred to Jackson, Ala. **Fred A. Honeycutt** has been appointed acting supervisor of track at Birmingham, Ala. **Lafayette A. Michael** has been appointed assistant supervisor of track at Birmingham.

C. M. Noble, assistant supervisor of track on the Pennsylvania at Freedom, Pa., has been promoted to supervisor of track at Monongahela, Pa., to succeed **W. N. Taggart,** who has been appointed supervisor of track, office of general manager, Eastern region. **F. N. White,** assistant supervisor of track at Columbus, Ohio, has been transferred to Freedom to replace Mr. Noble.

H. T. Alexander, supervisor of track on the North division of the Pennsylvania, has been transferred to the Ft. Wayne division at Valparaiso, Ind., and **C. C. Lint,** acting assistant supervisor on the Eastern division, has been promoted to supervisor on the Southwestern division, succeeding **R. G. Yates. R. L. McMurtrie,** returning from military service, has been appointed supervisor of track on the Chicago division at Logansport, Ind.

Ernie W. Potter, section foreman on the Southern at Oakdale, Tenn., has been promoted to supervisor of track at Danville, Ky. **T. Sease Oliver,** section fore-

man, has been appointed assistant supervisor of track at Union, S. C. **Wilmont A. Croft,** section foreman, has been appointed assistant supervisor of track at Blackville, S. C. **J. Carl Stoudemire** has been appointed assistant supervisor of track at Greenwood, S. C.

Bridge and Building

N. C. LeClaire has been appointed superintendent of bridges and buildings for the Terminal Railroad Association of St. Louis at St. Louis, Mo., succeeding **V. C. Hanna,** who has been promoted to chief engineer.

J. J. Connors, assistant supervisor of bridges and buildings on the Buffalo division of the New York Central at Buffalo, N. Y., has been promoted to supervisor of bridges and buildings on the Boston & Albany with headquarters at Boston, Mass.

J. E. Blake, Jr., general foreman, bridges and buildings, of the Pennsylvania, at Johnstown, Pa., has been appointed assistant supervisor of structures on the Philadelphia division at Harrisburg, Pa., to replace **L. B. Rasmussen,** who has been transferred to the New York division at New York.

Special

Lester H. Jackson, assistant chief tie and timber inspector on the Southern, has been promoted to chief tie and timber inspector, with headquarters as before at Atlanta, Ga., succeeding **Charles T. Keen,** who has retired after 45 years of service. Mr. Jackson has been replaced by **Albert T. Walker,** crosstie inspector.

Mr. Jackson was born at Carrollton, Miss., on July 31, 1894. Beginning his service with the Southern in January 1921 as a creosote yellow pine and crosstie inspector, he was made assistant chief tie and timber inspector in September 1941.

Mr. Walker was born at Beach Island, S. C., and began his employment with the railway in October 1941 as a crosstie inspector.

Neal D. Howard, secretary of the Engineering division of the AAR, has been named executive vice-chairman of that division, with headquarters in Chicago. **E. G. Gehrke,** assistant secretary of the Engineering division, has been appointed secretary succeeding Mr. Howard. Messrs. Howard and Gehrke will continue as secretary and assistant secretary, respectively, of the Construction and Maintenance section, Engineering division, as well as of the American Railway Engineering Association.

Obituary

James Manson, roadmaster on the Canadian Pacific at Virden, Man., died recently at the age of 62, and **Andrew J. Seal,** retired roadmaster on the Parry Sound subdivision, died recently at the age of 82.

(*Continued on page* 916)

Railway Personnel (Cont'd)

Otto E. Hager, assistant engineer on the Chesapeake & Ohio P. M. district at Detroit, Mich., died recently.

George R. Westcott, retired assistant engineer of the Missouri Pacific at St. Louis, Mo., and a life member of the AREA, died recently.

R. E. Caudle, assistant engineer of structures on the Missouri Pacific at Houston, Tex., prior to his retirement the first of this year, died recently at his home in Houston. Born at Clarksville, Tex., August 10, 1886, he entered railroad service with the Kansas City, Mexico & Orient. In March 1911, he entered the service of the Texas & Pacific and served as instrumentman and division engineer until August 1, 1915, when he joined the MP as an instrumentman at Mart, Tex. Since the latter date, Mr. Caudle had served as division engineer and supervisor of bridges and buildings at San Antonio, Tex., division engineer and assistant engineer of structures at Palatine, Tex., and office engineer, principal assistant engineer, and assistant engineer of structures at Houston.

Meetings and Conventions

American Railway Bridge and Building Association—Annual meeting, September 15-17, 1952, Conrad Hilton (Stevens) Hotel, Chicago. Elise LaChance, Secretary, 431 S. Dearborn street, Chicago 5

American Railway Engineering Association—Annual Meeting, March 17-19, 1953, Chicago. Neal D. Howard, Secretary, 59 E. Van Buren street, Chicago 5.

American Wood-Preservers' Association—W. A. Penrose, Secretary-treasurer, 839 Seventeenth street, N. W., Washington 6, D. C.

Bridge and Building Supply Association—L. R. Gurley, Secretary, 201 North Wells street, Chicago 6.

Maintenance of Way Club of Chicago—Next meeting October 27. E. C. Patterson, Secretary-treasurer, Room 1512, 400 W. Madison street, Chicago 6.

Metropolitan Maintenance of Way Club—Secretary, 30 Church street, New York.

National Railway Appliances Association—J. B. Templeton, Secretary, 1020 So. Central avenue, Chicago 44; Lewis Thomas, Assistant Secretary, 59 East Van Buren street, Chicago 5.

Railway Tie Association—Annual meeting, October 22-24, 1952, Jung Hotel, New Orleans, La. Roy M. Edmonds, Secretary-treasurer, 1221 Locust Street, St. Louis 3, Mo.

Roadmasters' and Maintenance of Way Association of America—Annual meeting, September 15-17, 1952, Conrad Hilton (Stevens) Hotel, Chicago. Elise LaChance, Secretary, 431 S. Dearborn street, Chicago 5.

Track Supply Association—Lewis Thomas, Secretary, 59 E. Van Buren street, Chicago 5.

Supply Trade News

General

The Maintenance Equipment Company, Railway Exchange Building, Chicago, has entered into an agreement, effective September 1, with the Rydin Railway Equipment Company to act as sole agent for the sale of the "Ryd-in" motor car and trailer couplers for use on all maintenance-of-way operations in the United States and Eastern Canada.

The **Syntron Company**, Homer City, Pa., has announced that the Syntron Chicago Sales Company has opened a new store at 236 N. Crawford Avenue, Chicago. In addition, Syntron has purchased a new manufacturing plant at Stony Creek, Ont.

Personal

Warren S. Mann, sales manager of the Dixie division of **Armco Drainage & Metal Products, Inc.**, has been appointed manager of the division with headquarters at Atlanta, Ga., succeeding **Howard See**, who has retired.

John E. Hawley, formerly on the staff of the engineer of tests on the Baltimore & Ohio, has joined the **Pennsylvania Salt Manufacturing Company's** research and development division at the Whitemarsh Research Laboratories, Wyndmoor, Pa.

G. T. Van Alstyne has been appointed director and **George M. Worden** has been appointed assistant director of advertising

(*Continued on page* 918)

Hugh H. Hurley, head of the new Railroad Welding Advisory Service recently inaugurated by the Eutectic Welding Alloys Corporation, Flushing, N. Y. The new service has been established to give the railroads the benefit of specialized experience in the uses of Eutectic low temperature welding alloys.

Supply Trade News (Cont'd)

and publicity for the **Air Reduction Company, Inc.**, New York.

M. E. Ziegenhagen has recently been appointed advertising and sales promotion manager of the **Worthington Corporation,** Harrison, N. J.

S. S. Bruce, Jr. and **J. S. Stevens,** recently appointed Eastern region zone managers for the railroad department of the **Air Reduction Sales Co., Inc.** (RE&M, August, p. 795), will maintain their respective headquarters at Philadelphia, Pa., and Waycross, Ga.

Mr. Bruce, a graduate of Franklin-Marshall College, joined the railroad department of Air Reduction in 1946 after serving as a second lieutenant with the U. S. Army.

Mr. Stevens, who attended the University of Illinois, joined the company in 1936 as a technical representative and served in that capacity in various parts of the country until 1943 when he joined the U. S. Navy. Upon discharge from the Navy in 1945 as a lieutenant, he returned to Air Reduction as general superintendent of railroad service in the technical sales department. Mr. Stevens became a member of the railroad department staff in 1946.

S. S. Bruce, Jr.

J. S. Stevens

Thor Germundsson has been named manager of the structural and railways bureau of the **Portland Cement Association,** Chicago, succeeding **Leo H. Corning** who has been appointed director of promotion.

Jim Suter, district representative for the **Frank G. Hough Company,** Libertyville, Ill., has joined the Cornhusker Tractor & Equipment Co., North Platte, Neb. Succeeding Mr. Suter will be **Dan Daily** and **Dick Lewis.** Mr. Daily will make his headquarters at Minneapolis, Minn., and cover the states of North and South Dakota, Minnesota, Iowa, and Upper Michigan. Mr. Lewis, whose headquarters will be at Kansas City, Mo., will cover the states of Western Missouri, Wyoming, Nebraska, and Colorado.

Trade Publications

To obtain copies of any of the publications mentioned in these columns, use postcards, page 903.

Stud Welding—"Maintaining Your Stud Welder" is the title of a new maintenance manual issued by the Stud Welding division of KSM Products, Inc., Merchantville, N. J. Designed for convenient reference by those charged with maintenance of stud welding equipment, the 12-page booklet contains eight drawings and charts and 12 photographs. Accompanying text explains the various aspects of maintenance based upon specific components and problems. The manual is divided into three basic sections: general information, maintenance, and accessories.

Weed Killer—The agricultural chemicals department of the Pennsylvania Salt Manufacturing Company has recently prepared a new service bulletin on the uses and application of Penite 6, a non-selective weed killer. Instructions are presented in the bulletin for top growth and aquatic weed control, together with explanations of the methods to be employed in soil treatment for the complete kill of weeds and grasses. Recommendations and instructions for the use of Penite 6 for debarking trees, killing trees or stumps, and as a control agent for termites, are also included in the bulletin.

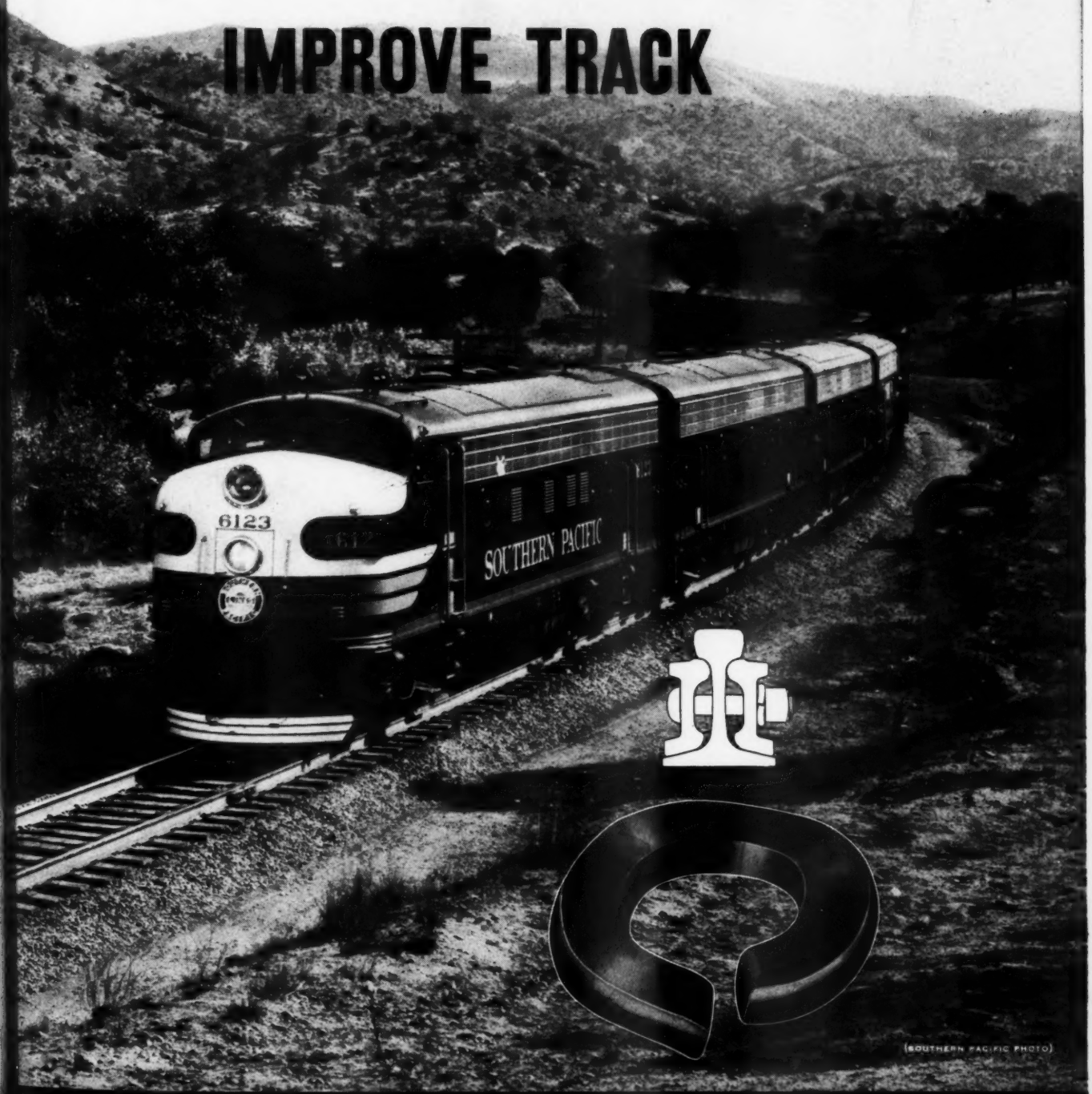
Steel Buildings— Armco Drainage & Metal Products, Inc., Middletown, Ohio, has published a 24-page illustrated booklet describing its Steelox buildings. The booklet, Manual SX-2051, shows how two standard types—shed roof and gable roof—can meet the need for warehouses, shops, offices and other similar structures. Descriptions of the erection of the interlocking panels are presented with detailed drawings. Other sections deal with accessories, insulation, painting and interior finishing. Several pages of photographs of typical industrial and business installations are also presented.

Advertisers IN THIS ISSUE

Whether track goes over mountains, around or through them, repair work and constant maintenance are uppermost in the minds of hundreds of important railroad executives. These are the men who with their well-run departments are held responsible for keeping roadbeds in first class condition. These men make travel by rail safer.

IMPROVED HIPOWERS

IMPROVE TRACK



NATIONAL LOCK WASHER COMPANY, NEWARK 5, N. J., U. S. A.